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# Section 0

# General Information

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# General Information

## General Information

## Introduction

### RPO Code List

The following table provides the description of the Regular Production Option (RPO) codes that are available on the vehicle. The vehicle's RPO list is printed on the Service Parts Identification Label.

| RPO | Description |
|---|---|
| 1FL | PACKAGE - FL OPTION 1 |
| 1LS | PACKAGE - LS OPTION 1 |
| 1LT | PACKAGE - LT OPTION 1 |
| 1LZ | PACKAGE - LZ OPTION 1 |
| 1SP | PACKAGE - OPTION 14 |
| 2Z7 | PACKAGE - Z71 OPTION 1 |
| 3LZ | PACKAGE - LZ OPTION 3 |
| 4AA | INTERIOR TRIM - JET BLACK |
| 4DW | INTERIOR TRIM - JET BLACK/SKY COOL GREY |
| 4JJ | INTERIOR TRIM - GIDEON/VY DK ATMOSPHERE |
| 4JT | INTERIOR TRIM - JET BLACK / VICTORY RED |
| 4KJ | INTERIOR TRIM - JET BLACK/CLOVE |
| 5FF | ACCESSORY - WHEEL - 24 X 9.5, J, ALUMINUM, DESIGN 3 |
| 5FG | ACCESSORY - WHEEL - 24 X 9.5, J, ALUMINUM, DESIGN 4 |
| 5J0 | CALIBRATION - FRONT PARK ASSIST DISABLE |
| 5JL | ACCESSORY - BRAKE UPGRADE PKG 1 - COMPLETE |
| 5KW | ACCESSORY - EXTERIOR APPEARANCE PACKAGE 2 |
| 5RU | ACCESSORY - ILLUMINATED SILL PLATE - RR COMPT OPENING |
| 5T5 | SEAT OVERRIDE - (SEO) |
| 5V4 | ACCESSORY - EXTERIOR APPEARANCE PACKAGE 1 |
| 5VF | ACCESSORY - EXHAUST TIP - DESIGN 3 |
| 5W4 | AUX BATTERY - LN3, AGM, 12V, 70AH, 760 ENCCA |
| 5W4 | BATTERY - LN5, AGM, 12V, 95AH, 900 ENCCA |
| 5W4 | CALIBRATION - SPEEDOMETER A |
| 5W4 | INTERIOR TRIM CONFIG - CLOTH, LEVEL 1, JET BLACK |
| 5W4 | LUGGAGE CARRIER - ROOF - NONE |
| 5W4 | PARK ASSIST - REAR |
| 5W4 | PLATE - FULL BODY, SKID |
| 5W4 | RESTRAINT SYSTEM - DRVR (SINGLE, ADAPTIVE) & PASS (DUAL) FRT, SEAT SIDE, ROOF SIDE |
| 5W4 | SEAT THIRD ROW - NONE |
| 5W4 | SALES PACKAGE - SPECIAL SERVICE, MUNICIPAL |
| 5Y1 | SEAT CENTER - FRONT ROW 20% CENTER SEAT DELETE (SEO) |
| 65C | LABEL, WARNING - CALIFORNIA, PROP 65 COMPLIANT |
| 9C1 | AUX BATTERY - LN3, AGM, 12V, 70AH, 760 ENCCA |
| 9C1 | BATTERY - LN5, AGM, 12V, 95AH, 900 ENCCA |
| 9C1 | BRAKE SYSTEM - HEAVY DUTY |
| 9C1 | CALIBRATION - SPEEDOMETER A |
| 9C1 | CHASSIS PACKAGE - POLICE CONVERSION |
| 9C1 | COOLING SYSTEM - EXTRA CAPACITY |
| 9C1 | INTERIOR TRIM CONFIG - CLOTH, LEVEL 1, JET BLACK |
| 9C1 | LUGGAGE CARRIER - ROOF - NONE |
| 9C1 | PARK ASSIST - REAR |
| 9C1 | PLATE - FULL BODY, SKID |
| 9C1 | RESTRAINT SYSTEM - DRVR (SINGLE, ADAPTIVE) & PASS (DUAL) FRT, SEAT SIDE, ROOF SIDE |
| 9C1 | SEAT THIRD ROW - NONE |
| 9C1 | SALES PACKAGE - POLICE VEHICLE |
| A2X | ADJUSTER DRIVER SEAT - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| A45 | MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION |
| A50 | SEAT - FRT BKT |
| A7J | ADJUSTER PASS ST - 6WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT |
| A7K | ADJUSTER PASS ST - 8WAY, PWR RECLINE, PWR FORE/AFT, PWR HEIGHT, PWR TILT |
| A8K | ROOF - SUN, GLASS, SLIDING, ELEC, TRANSPARENT GLASS FIXED |
| A8K | STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BLACK |
| A8K | SUSPENSION SYSTEM - FRT & RR, AIR |
| A8K | SALES PACKAGE - HIGH END PACKAGE |
| AAK | ACCESSORY - FLOOR LINER - CONTOURED - ALT DESIGN 1 |
| ABV | ADJUSTER REAR SEAT - 6 WAY, PWR RECLINE, PWR FORE/AFT, PWR TILT |

| RPO | Description |
|---|---|
| ABV | BOLSTER REAR - SEAT, POWER |
| ABV | CONSOLE RR - COMPT, FLOOR |
| ABV | CONTROL - SEAT, REAR, POWER MASSAGE |
| ABV | HEATER SEAT - REAR |
| ABV | RECPT USB FLR CNSL R - DUAL, CHARGE |
| ABV | SEAT RR - BKT |
| ABV | SPEAKER SYSTEM - PREMIUM AUDIOPHILE AUDIO, BRANDED SURROUND AMPLIFIER |
| ABV | VENTILATED SEAT RR - SECOND ROW |
| AEF | WINDOW REG PASS DR - POWER OPERATED, EXPRESS UP/DOWN |
| AEQ | WINDOW REG REAR DR - POWER OPERATED, EXPRESS DOWN |
| AKJ | WINDSHIELD STYLE - SHADE BAND |
| AKK | WINDSHIELD STYLE - ACOUSTIC PVB |
| AKO | WINDOW TYPE - PRIVACY |
| AKP | WINDOW TYPE - SOLAR ABSORBING |
| AKX | WINDSHIELD TYPE - SOLAR ABSORBING |
| AL0 | SENSOR INDICATOR - INFLATABLE RESTRAINT, FRT PASS/CHILD PRESENCE DETECTOR |
| AL9 | LUMBAR DRIVER - SEAT, POWER, 2 WAY |
| AMF | LOCK CONTROL - ADDITIONAL, PROGRAMMABLE, REMOTE ENTRY, MULTIPLE UNITS |
| ARL | PLANT CODE - ARLINGTON, TX, USA |
| ARN | SEAT THIRD ROW - 60/40 BENCH, MAN FOLD |
| AS8 | SEAT THIRD ROW - 60/40 BENCH, POWER FOLD |
| ASD | RESTRAINT SYSTEM - DRVR (SINGLE, ADAPTIVE) & PASS (DUAL) FRT, FRT & CTR SEAT SIDE, ROOF SIDE |
| AT6 | SEAT RR - BENCH, 60/40 MANUAL CONFIGURABLE |
| AT9 | LUMBAR PASSENGER - SEAT, POWER, 2 WAY |
| ATD | SEAT THIRD ROW - NONE |
| ATH | LOCK CONTROL, ENTRY - REMOTE ENTRY, EXTENDED RANGE, PASSIVE ENTRY, ALL DOORS |
| ATN | SEAT RR - BUCKET, POWER CONFIGURABLE |
| ATT | SEAT RR - BENCH, 60/40 POWER CONFIGURABLE |
| AU3 | LOCK CONTROL - SIDE DR, ELEC |
| AU7 | KEY - COMMON, FLEET |
| AUN | MEMORY - DRIVER SEAT |

| RPO | Description |
|---|---|
| AVI | RESTRAINT PROVISIONS - ADJUSTABLE GUIDE LOOP |
| AVK | LUMBAR DRIVER - SEAT, POWER, 4 WAY |
| AVU | LUMBAR PASSENGER - SEAT, POWER, 4-WAY |
| AX2 | KEY - COMMON, VEHICULAR UNIQUE |
| AXG | WINDOW REG DRVR DR - POWER OPERATED, EXPRESS UP/DOWN |
| AXP | VEHICLE TYPE - MULTI-PURPOSE PASSENGER VEHICLE |
| AYH | RESTRAINT SYSTEM - DRVR (SINGLE, ADAPTIVE) & PASS (DUAL) FRT, SEAT SIDE, ROOF SIDE |
| AZ3 | SEAT - FRT SPLIT, DRIVER, PASS, FULL FEATURE CENTER |
| B1V | HANDLE O/S DOOR - CHROME, BODY COLOR STRIP |
| B26 | COLL IMMINENT BRK - LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| B26 | CROSS TRAFFIC ASSIST - INTERSECTION ALERT, BRAKING |
| B26 | DETECTION SIDE - DOOR OPENING WARNING, PEDESTRIANS/BICYLISTS/ VEHICLE |
| B26 | HEADLAMP HIGH BEAM - AUTO CONTROL |
| B26 | LANE ACTIVE SAFETY - KEEP ASSIST (OPTIMAL RETURN) |
| B26 | MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY |
| B26 | PED DETECTION FRT - ENHANCED, PEDESTRIANS AND BICYLISTS |
| B26 | REAR CROSS TRAFFIC - ALERT, BRAKING |
| B26 | SENSOR INDICATOR - FORWARD COLLISION ALERT |
| B26 | SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR |
| B26 | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST |
| B26 | SALES PACKAGE - SAFETY PACKAGE VAR. 1 |
| B30 | COVERING FLOOR - CARPET |
| B3L | STEPS, RUNNINGBOARD - SIDE, RETRACTABLE, POWER, BLACK |
| B58 | COVERING - FLOOR MAT, FRT & RR, CARPETED INSERT |
| BCN | LOCK CONTROL - RETAIL LOCKING FEATURE (SEO) |
| BG9 | COVERING FLOOR - RUBBER |
| BOR | VEHICLE INTERFACE - SMARTPHONE, UPLEVEL, RETAIL, DEACTIVATED |
| BOY | VEHICLE INTERFACE - SMARTPHONE, UPLEVEL, RETAIL |

| RPO | Description |
|---|---|
| BTM | SWITCH - START, KEYLESS |
| BTV | REMOTE START - VEHICLE |
| BVE | STEPS, RUNNINGBOARD - SIDE |
| BVZ | STEPS, RUNNINGBOARD - SIDE, NONE |
| C25 | WIPER SYS RR WINDOW - INTERMITTENT |
| C3A | HEATER AIR SYSTEM - HEATING/ DEFROSTER SYSTEM, REINFORCED, ELECTRIC, 1.5KW |
| C3Q | PLATE - DOOR SILL COVER, UPLEVEL |
| C3U | ROOF - SUN, GLASS, SLIDING, ELEC, TRANSPARENT GLASS FIXED |
| C49 | DEFOGGER - RR WINDOW, ELECTRIC |
| C69 | HVAC SYSTEM RR - AIR CONDITIONER |
| CAV | ACCESSORY - TRAY - TRUNK/CARGO AREA |
| CE1 | WIPER SYS WINDSHIELD - PULSE, MOISTURE SENSITIVE |
| CJ2 | HVAC SYSTEM - AIR CONDITIONER FRT, AUTO TEMP CONT, AUX TEMP CONT |
| CTB | CROSS TRAFFIC ASSIST - INTERSECTION ALERT, BRAKING |
| CTT | HITCH ASSIST - GUIDELINES |
| CWA | WASHER - CAMERA, REAR |
| CWM | BODY EQUIPMENT - LIFT GATE, POWER, HANDS FREE, PRESENCE |
| CWM | CONSOLE - FRT COMPT, FLOOR, ARM REST SLIDING, UP LEVEL |
| CWM | HEAD UP DISPLAY - WINDSHIELD |
| CWM | HEATER - SEAT, VENTED, FRT |
| CWM | MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY |
| CWM | SHIELD - LOCK & LATCH, CLOSURES |
| CWM | SALES PACKAGE - TECHNOLOGY |
| CWN | BODY EQUIPMENT - LIFT GATE, POWER, HANDS FREE, PRESENCE |
| CWN | LANE ACTIVE SAFETY - KEEP ASSIST, HANDS FREE LANE FOLLOWING(ENTIRE SPEED RANGE) |
| CWN | MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY |
| CWN | SHIELD - LOCK & LATCH, CLOSURES |
| D07 | CONSOLE - FRT COMPT, FLOOR, CUSTOM |
| D31 | MIRROR I/S R/V - TILT |
| D75 | HANDLE O/S DOOR - BODY COLOR |
| DCH | CONSOLE - FRT COMPT, FLOOR, ARM REST SLIDING, UP LEVEL |
| DD8 | MIRROR I/S R/V - LT SENSITIVE |
| DH6 | MIRROR I/S FRT VAN - LH & RH, SUNSHADE, ILLUM |

| RPO | Description |
|---|---|
| DLF | MIRROR O/S - LH & RH, RC, ELEC, HEAT, MAN FOLD, FLAT/DRVR, CNVXPASS |
| DNS | EQUIPMENT - SUPPLIER INSTALLED |
| DP6 | MIRROR PROVISIONS - HOUSING, PAINTED |
| DP9 | MIRROR PROVISIONS - HOUSING, CHROME |
| DRZ | MIRROR I/S R/V - LT SENSITIVE, FULL VIDEO DISPLAY |
| DXR | MIRROR O/S - LH & RH, RC, ELEC, HEAT, FLAT/DRVR, PWRFOLD, LT SENS DRVR, CNVX/PASS, TURN SIG IND, PERM LIGHT |
| ENL | ENG CONTROL DISABLE - STOP/START, NON-LATCHING |
| EPH | TRANS RANGE SEL SYS - ELECTRONIC |
| F47 | SUSPENSION SYSTEM - FRT & RR, AIR |
| F48 | CHASSIS DRIVE LINE - ALL WHEEL DRIVE (AWD)/FOUR WHEEL DRIVE(4WD), DRIVER SELECT |
| FE9 | CERTIFICATION - EMISSION, FEDERAL |
| FHX | VEHICLE FUEL - DIESEL B20 |
| FJW | VEHICLE FUEL - GASOLINE E15 |
| G0Q | TRIM PACKAGE - Z71 |
| G28 | TRIM PACKAGE - 1FL |
| G4J | PRIMARY COLOR - EXTERIOR, POLAR WHITE TRI MET-1 (241L) |
| G6M | PRIMARY COLOR - EXTERIOR, RUSH MET-1 (618G) |
| G86 | AXLE - LIMITED SLIP |
| G96 | AXLE POSITRACTION - LIMITED SLIP, ELECTRONIC |
| GAZ | PRIMARY COLOR - EXTERIOR, SUMMIT WHITE (G) 8624 |
| GBA | PRIMARY COLOR - EXTERIOR, BLACK (G) 8555 |
| GBD | PRIMARY COLOR - EXTERIOR, AEGEAN SOLID (229K) |
| GF3 | TRIM PACKAGE - LT |
| GF9 | TRIM PACKAGE - LTZ |
| GFC | TRIM PACKAGE - RST |
| GFD | TRIM PACKAGE - HIGH COUNTRY |
| GNT | PRIMARY COLOR - EXTERIOR, RADIANT RED TINT MET-1 (170H) |
| GU5 | AXLE REAR - 3.23 RATIO |
| GVO | TRIM PACKAGE - LS |
| GXD | PRIMARY COLOR - EXTERIOR, SHARKSKIN MET-1 (130H) |
| GXP | PRIMARY COLOR - EXTERIOR, COSMONAUT MET-1 (136H) |
| H0U | INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, JET BLACK |

| RPO | Description |
|---|---|
| H0Y | INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, JET BLACK |
| H1T | INTERIOR TRIM CONFIG - CLOTH, LEVEL 1, JET BLACK |
| H1Y | INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, JET BLACK |
| HMR | INTERIOR TRIM CONFIG - LEATHER, LEVEL 6, JET BLACK |
| HS1 | ALERT - SAFETY HAPTIC SEAT |
| HUN | INTERIOR TRIM CONFIG - LEATHER, LEVEL 2.0, JET BLACK / SKY COOL GRAY |
| HV5 | INTERIOR TRIM CONFIG - CLOTH, LEVEL 2, GIDEON/VY DK ATMOSPHERE |
| HVA | INTERIOR TRIM CONFIG - LEATHER, LEVEL 2, JET BLACK / VICTORY RED |
| HVB | INTERIOR TRIM CONFIG - LEATHER, LEVEL 3, JET BLACK / CLOVE |
| HVC | INTERIOR TRIM CONFIG - LEATHER, LEVEL 1, GIDEON/VY DK ATMOSPHERE |
| IVE | INFOTAINMENT - VIRTUAL COCKPIT SYS - HIGH |
| J26 | ENGINEERING YEAR - 2026 |
| J49 | BRAKE SYSTEM - POWER, FRT & RR DISC, ABS, 20" HD |
| J55 | BRAKE SYSTEM - HEAVY DUTY |
| J61 | BRAKE SYSTEM - POWER, FRT & RR DISC, ABS, 17" |
| J6F | CALIPER COLOR - RED |
| JBK | BRAKE LINING WEAR SY - WEAR LIFE INDICATOR |
| JHD | BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD |
| JL1 | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| K05 | HEATER ENG - BLOCK |
| K1O | FILTER MONITOR - ENGINE AIR |
| K34 | CRUISE CONTROL - AUTOMATIC, ELECTRONIC |
| K3W | BATTERY - LN5, AGM, 12V, 95AH, 900 ENCCA |
| K47 | AIR CLEANER - HIGH CAPACITY |
| K4F | BATTERY - LN4, AGM, 12V, 80AH, 800 ENCCA |
| K53 | AIR CLEANER - PERFORMANCE |
| K6K | AUX BATTERY - LN3, AGM, 12V, 70AH, 760 ENCCA |
| K6L | FILTER - AIR, POLLUTANT, ODOR & FINE DUST |
| K7A | CHARGER FRT ROW - PORTABLE DEVICE, INDUCTIVE, SINGLE |
| KA1 | HEATER SEAT FRT - DRVR & PASS |
| KA6 | HEATER SEAT - REAR |

| RPO | Description |
|---|---|
| KC4 | COOLING SYSTEM - ENG OIL |
| KGU | MODULE - UPFITTER, SERIAL DATA GATEWAY |
| KI3 | STEERING WHEEL HEAT - AUTOMATIC |
| KI4 | RECEPTACLE I/P - ELECTRICAL, 110 VOLT |
| KL9 | ENG CONTROL - STOP/START SYS, CONVENTIONAL AT, CONVENTIONAL MT OR BRAKE RELEASE LATE RESTART |
| KNP | COOLING SYSTEM - TRANS, HD |
| KQV | HEATER - SEAT, VENTED, FRT |
| KSG | CRUISE CONTROL - AUTOMATIC, ADAPTIVE, WITH STOP/GO |
| KW5 | GENERATOR - 220 AMP |
| KX4 | GENERATOR - 250 AMP |
| L84 | ENGINE - GAS, 8 CYL, 5.3L, V8, DI, DFM, ALUM, GEN 5 |
| L87 | ENGINE - GAS, 8 CYL, V8, 6.2L, DI, DFM, ALUM, GEN 5 |
| LZ0 | ENGINE - DIESEL, 6 CYL, 3.0L, CRI, L6, DOHC, TURBO, VGT, ALUM, CSS50V, VAR. 2 |
| MAH | MARKETING AREA - US, PUERTO RICO/ USVI |
| MHS | TRANSMISSION - AUTO 10 SPD, 10L80, GRX, GEN 1, ATSS, ETRS, VAR 1 |
| MHU | TRANSMISSION - AUTO 10 SPD, 10L80, GRX, GEN 1, ETRS, VAR 1 |
| MQC | TRANSMISSION - AUTO 10 SPD, 10L80, ATSS, ETRS, CPA, GEN 2 |
| N06 | STEERING COLUMN LOCK - ELECTRICAL |
| N10 | EXHAUST SYSTEM - DUAL |
| N37 | STEERING COLUMN - TILT, TELESCOPING |
| N38 | STEERING COLUMN - TILT, TELESCOPING, POWER |
| N53 | STEERING WHEEL - SYNTHETIC, 3 SPOKE, SPORT, ROUND |
| N5V | STEERING WHEEL - URETHANE, 3 SPOKE, THIN, ROUND |
| NB5 | EXHAUST SYSTEM - SINGLE |
| NE1 | CERTIFICATION - EMISSION, GEOGRAPHICALLY RESTRICTED REGISTRATION |
| NHT | BRK APL CTRL FEATURE - HILL DESCENT, GEAR HOLD |
| NHT | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| NHT | COOLING SYSTEM - EXTRA CAPACITY |
| NHT | TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM |
| NHT | PERFORMANCE PACKAGE - ENHANCED TOWING |
| NL3 | EMISSION SYSTEM - ULEV70/BIN70: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV |

| RPO | Description |
|---|---|
| NL8 | EMISSION SYSTEM - ULEV50/BIN50: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV |
| NLB | EMISSION SYSTEM - SULEV30/BIN30: CA LEV4/FED TIER3, 0K-8.5K GVW LDV, 8.5K-10K GVW MDPV |
| NP0 | TRANSFER CASE - ACTIVE, SINGLE SPEED,SWITCH ACTIVATED,ALUM |
| NQH | TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM |
| NWM | SHIELD - LOCK & LATCH, CLOSURES |
| NZV | WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 21 |
| NZW | WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 22 |
| PAN | PHONE PROJ TECH - VAR 1 |
| PAP | PHONE PROJ TECH - VAR 2 |
| PPW | PHONE PROJECTION - PHONE PROJECTION WIRELESS |
| PXT | WHEEL - 20 X 9.0, J, STEEL, DESIGN 1 |
| PZ8 | IMAGE ADJUSTMENT - HITCH VIEW |
| Q8E | JACK - MECHANICAL, W/TOOLS |
| QAE | TIRE ALL - 275/60R20 SL 115S BW AT |
| QDF | TIRE ALL - 265/65R18 SL 114T BW ALS VAR 1 |
| QKN | TIRE ALL - 285/40R24 XL 112H BW AL3 VAR1 |
| R4C | WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 18 |
| R4H | WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 22 |
| R4M | WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 25 |
| R88 | ACCESSORY - ILLUMINATED EMBLEM - EXTERIOR - DESIGN 2 |
| RAV | TIRE SPARE - 275/55R20 SL 113V BW AL3 VAR 1 |
| RBR | WHEEL - 22 X 9.0, J, STEEL, DESIGN 1 |
| RC1 | PLATE - FULL BODY, SKID |
| RCV | WHEEL - 18 X 8.5, J, ALUMINUM, DESIGN 4 |
| RD2 | WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 2 |
| RDI | ACCESSORY - KEYLESS ENTRY |
| RF1 | WHEEL - 24 X 9.5, J, ALUMINUM, DESIGN 1 |
| RF2 | WHEEL - 24 X 9.5, J, ALUMINUM, DESIGN 2 |
| RF8 | WHEEL - 24 X 9.5, J, STEEL, DESIGN 1 |
| RIA | ACCESSORY - FLOOR LINER - CONTOURED |
| RIB | ACCESSORY - FLOOR LINER - CONTOURED - 3RD ROW |

| RPO | Description |
|---|---|
| RIK | ACCESSORY - BADGE - EXTERIOR, PACKAGE, DESIGN 1 |
| RM7 | WHEEL SPARE - 17 X 8.0, J, STEEL, DESIGN 1 |
| RNQ | WHEEL SPARE - 20 X 9.0, J, STEEL, DESIGN 1 |
| RSR | OCCUPANT DETECT SYS - REAR SEAT, DOOR ACTIVATED |
| RVG | ACCESSORY - ADAPTER - TRAILER HARNESS |
| RVS | ACCESSORY - ASSIST STEPS - TUBULAR - ROUND - BLACK |
| RWL | CHASSIS DRIVE LINE - REAR WHEEL DRIVE (RWD) |
| RWU | ACCESSORY - CARGO AREA ORGANIZER - COLLAPSIBLE |
| RXH | ACCESSORY - CENTER CAP - WHEEL - DESIGN 1 |
| RXJ | ACCESSORY - CENTER CAP - WHEEL - DESIGN 2 |
| RZB | ACCESSORY - GRILLES/GRILLE INSERT - ALTERNATE DESIGN 2 |
| S08 | ACCESSORY - HIGHWAY SAFETY KIT |
| S0M | ACCESSORY - ILLUMINATED DOOR SILLS |
| S1O | ACCESSORY - CONTAINER - LOCKABLE STORAGE - INTERIOR |
| S3I | ACCESSORY - LAMPS - PERIMETER ILLUMINATION |
| S45 | ACCESSORY - LUG NUT AND WHEEL LOCK KIT |
| S47 | ACCESSORY - LUG NUTS |
| S4W | ACCESSORY - LUG NUT AND WHEEL LOCK KIT DESIGN 2 |
| S4X | ACCESSORY - MIRROR COVERS/SKULL CAPS - ALTERNATE FINISH - PAINTED |
| SAF | LOCK - SPARE TIRE, HOIST SHAFT |
| SB9 | ACCESSORY - DECAL PACKAGE - DESIGN 2 |
| SBZ | ACCESSORY - SPORT PEDAL KIT |
| SD3 | ACCESSORY - FOLDABLE BOX - FLEXIBLE ORGANIZER - RR COMPT |
| SD5 | ACCESSORY - TIRE PRESSURE MONITOR |
| SEV | ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 3 |
| SFE | ACCESSORY - WHEEL LOCKS |
| SFJ | ACCESSORY - WINDOW SHADES - REFLECTIVE |
| SFU | ACCESSORY - WHEEL - 22" - ALUMINUM - DESIGN 12 |
| SFZ | ACCESSORY - EMBLEM - EXTERIOR - DESIGN 1 |
| SGF | WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 4 |

| RPO | Description |
|---|---|
| SGM | ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 9 |
| SII | WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 8 |
| SIY | WHEEL - 22 X 9.0, J, ALUMINUM, DESIGN 9 |
| SPY | ACCESSORY - LUG NUTS - ALT FINISH |
| SRL | ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 13 |
| SRV | ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 14 |
| SSW | ACCESSORY - WHEEL - 22 X 9.0 - J - ALUMINUM - DESIGN 17 |
| ST0 | SEAT THIRD ROW - NONE |
| ST0 | WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 21 |
| ST1 | LATCH - FRT & RR DOORS, CINCHING |
| ST1 | SUSPENSION SYSTEM - FRT & RR, AIR |
| T40 | LAMP FRT FOG - FRT FOG, LED |
| T8Z | SEAT BELT SAFETY SYS - SHIFTER INTERLOCK, GEN 3, INFOTAINMENT CUSTOMIZABLE |
| TAB | LAMP REAR COMBO - BASE |
| TAU | LAMP REAR COMBO - UPLEVEL |
| TB4 | BODY EQUIPMENT - LIFT GATE (MANUAL) |
| TB5 | BODY EQUIPMENT - LIFT GATE (POWER) |
| TCP | BODY EQUIPMENT - LIFT GATE, POWER, HANDS FREE, PRESENCE |
| TDM | MODE DRIVER SETTINGS - TEEN DRIVER, INFOTAINMENT |
| TGD | HEADLAMP LEVEL - MIDLEVEL |
| TGE | HEADLAMP LEVEL - UPPER |
| THS | TRAILERING ASSIST - GUIDELINES |
| TQ5 | HEADLAMP HIGH BEAM - AUTO CONTROL |
| TRG | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| TRO | ACCESSORY - CAMERA PKG - TRAILERING AUX MOUNTED |
| TUF | ORNAMENTATION - EMBLEM, "TEXAS EDITION" |
| U05 | HORN - DUAL |
| U2J | DIGITAL AUDIO SYSTEM - S-BAND - NONE |
| U2K | DIGITAL AUDIO SYSTEM - S-BAND |
| U5G | COMMUNICATION EQUIP - INTERNET CONNECTIVITY, 5G |
| UB3 | ANTENNA - FIXED, RR SPOILER, RADIO |
| UBC | RECPT USB ARMREST - DUAL, CHARGE, DATA |
| UBD | RECPT USB FLR CNSL F - DUAL, CHARGE, DATA |

| RPO | Description |
|---|---|
| UCB | RECPT USB TRIM - SINGLE, CHARGE |
| UCV | CONNECTED CAMERA - EXTERIOR, INTERIOR |
| UD7 | PARK ASSIST - REAR |
| UDA | COMMUNICATION SYSTEM - VEHICLE, DEACTIVATED |
| UE1 | COMMUNICATION SYSTEM - VEHICLE, ONSTAR |
| UET | INDICATOR - SMART TRAILER INTEGRATION |
| UEU | SENSOR INDICATOR - FORWARD COLLISION ALERT |
| UFB | REAR CROSS TRAFFIC - ALERT, BRAKING |
| UG1 | OPENER - GARAGE DOOR, UNIVERSAL |
| UGA | HOOK - TOW, RED |
| UGN | COLL IMMINENT BRK - ALL SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| UH5 | INDICATOR - SEAT BELT WARNING, REAR SEAT |
| UH6 | INDICATOR - SEAT BELT WARNING, REAR SEAT, 3RD ROW |
| UHY | COLL IMMINENT BRK - LOW SPEED, VEH FWD MOVEMENT, BRAKE PREFILL, INTEGRATED BRAKE ASSIST |
| UJN | TIRE PRESS INDICATOR - AUTO LEARN |
| UK3 | CONTROL - STEERING WHEEL, ACCESSORY |
| UKI | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST |
| UKK | SENSOR INDICATOR - PEDESTRIAN DETECTION - REAR |
| UKL | LANE ACTIVE SAFETY - KEEP ASSIST, HANDS FREE LANE FOLLOWING(ENTIRE SPEED RANGE) |
| UKM | LANE ACTIVE SAFETY - KEEP ASSIST (OPTIMAL RETURN) |
| UKT | PED DETECTION FRT - ENHANCED, PEDESTRIANS AND BICYLISTS |
| UKW | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST, EXTENDED TRAILER VIEW |
| UKZ | PARK ASSIST - FRONT, REAR, LATERAL-FRONT (SEMIAUTOMATIC STEERING & BRAKING & GEAR SHIFTING ADVANCED PARKING AID) |
| ULM | DRVR MONITORING SYS - DROWSINESS WARNING |
| UMN | SPEEDOMETER - INST, MILES & KILO, MILES ODOMETER |
| UOW | DETECTION SIDE - DOOR OPENING WARNING, PEDESTRIANS/BICYLISTS/ VEHICLE |
| UQF | SPEAKER SYSTEM - STANDARD AUDIO |

| RPO | Description |
|---|---|
| UQS | SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED SURROUND AMPLIFIER |
| URF | DISPLAY INSTRUMENT - DRIVER INFO, DISPLAY ONLY, FAMILY C, 11", 2000 X 810 |
| URW | INFOTAINMENT DISPLAY - FAMILY C, 17.7", 4784X2300 |
| UTJ | THEFT DETERENT - ELECTRICAL, UNAUTHORIZED ENTRY |
| UTR | ALARM, HORN - CONTENT THEFT DETERENT, SELF POWERED |
| UTU | SENSOR, VEHICLE - INCLINATION |
| UTV | SENSOR, VEHICLE - INTERIOR MOVEMENT |
| UTW | SENSOR, VEHICLE - GLASS BREAKAGE |
| UUA | DISPLAY AOS - OCCUPANT SENSING, MVSS |
| UV2 | VISION - 360 VIEW, MONO, HD DIGITAL |
| UV6 | HEAD UP DISPLAY - WINDSHIELD |
| UVX | SENSOR INDICATOR - TRAFFIC SIGN RECOGNITION ENHANCED |
| UVZ | SENSOR - COLLISION AVOIDANCE & MITIGATION, VEHICLE REVERSE MOVEMENT |
| UW9 | ENTERTAINMENT PKG - RR SEAT, DUAL DISPLAY, SEAT BACK |
| V03 | COOLING SYSTEM - EXTRA CAPACITY |
| V53 | LUGGAGE CARRIER - ROOF - NONE |
| V54 | LUGGAGE CARRIER - ROOF, PAINTED |
| V55 | LUGGAGE CARRIER - ROOF, CHROME |
| V76 | HOOK - TOW |
| V8D | VEHICLE STATEMENT - VEHICLE LABEL CONTENT - U.S. FMVSS |
| VAV | ACCESSORY - FLOOR MATS - ALL WEATHER |
| VFF | VIDEO FORMAT - REGION 1, NTSC |
| VGC | PROTECTOR - FILM, PAINT ETCH PREVENTIVE |
| VHM | PROGNOSTIC SYSTEM - VEHICLE HEALTH MANAGEMENT |
| VK3 | LICENSE PLATE FRONT - FRT MOUNTING PKG |
| VKU | ACCESSORY - MIRROR CAPS - CHROME |
| VPH | VEHICLE PREPARATION - OVERSEAS DELIVERY |
| VQK | ACCESSORY - SPLASH GUARDS - CUSTOM MOLDED |
| VQQ | ACCESSORY - CROSS RAILS - ROOF RACK - INTEGRATED - BLACK |
| VQZ | ACCESSORY - EXHAUST TIP - DESIGN 1 |
| VR6 | HOOK - TIE-DN SHPG |
| VRS | ACCESSORY - CARGO SECURITY SHADE |

| RPO | Description |
|---|---|
| VSX | LABEL - TOWING |
| VT7 | OWNERS MANUAL - ENGLISH LANGUAGE |
| VTA | ACCESSORY - EXHAUST TIP - DESIGN 2 |
| VTB | ACCESSORY - PROTECTOR - REAR BUMPER |
| VTI | SHUTTERS - FRONT GRILLE, ACTIVE, UPR |
| VV4 | COMMUNICATION EQUIP - MOBILE INTERNET CONNECTIVITY |
| VW9 | ACCESSORY - CENTER CAP - WHEEL - DESIGN 3 |
| VWD | ACCESSORY - CENTER CAP - WHEEL - DESIGN 4 |
| VXH | ACCESSORY - ASSIST STEPS - TUBULAR - CHROME - OVAL |
| VZ2 | CALIBRATION - SPEEDOMETER A |
| W2D | ACCESSORY - CARGO NET |
| WBC | ACCESSORY - EXHAUST UPGRADE |
| WBL | CHASSIS PACKAGE - MAGNERIDE |
| WBL | ENGINE - GAS, 8 CYL, V8, 6.2L, DI, DFM, ALUM, GEN 5 |
| WBL | EXHAUST SYSTEM - DUAL |
| WBL | SALES PACKAGE - SPORT |
| WMI | SHUTTERS - FRONT GRILLE, ACTIVE, UPR AND LWR |
| WNO | VIN MODEL YEAR - 2026 |
| WPK | BRAKE SYSTEM - POWER, FRT & RR DISC, ABS, 20" HD |
| WPK | CALIPER COLOR - RED |
| WPK | CHASSIS PACKAGE - HIGH PERFORMANCE |
| WPK | ENGINE - GAS, 8 CYL, V8, 6.2L, DI, DFM, ALUM, GEN 5 |
| WPK | LUGGAGE CARRIER - ROOF - NONE |
| WPK | SALES PACKAGE - COMFORT |
| WPK | TIRE ALL - 275/55R20 SL 113V BW AL3 VAR1 |
| WPK | WHEEL - 20 X 9.0, J, ALUMINUM, DESIGN 22 |
| WPK | SALES PACKAGE - SPORT PACK |
| WPL | CONSOLE - FRT COMPT, FLOOR, ARM REST SLIDING, UP LEVEL |
| WPL | LAMP FRT FOG - FRT FOG, LED |
| WPL | MIRROR I/S R/V - LT SENSITIVE |
| WPL | OPENER - GARAGE DOOR, UNIVERSAL |
| WPL | SALES PACKAGE - LUXURY |
| WTX | FASCIA - FRT, STANDARD |
| WUA | FASCIA - FRT, CUSTOM |
| WX7 | WIRING PROVISIONS - (SEO) |

| RPO | Description |
|---|---|
| X88 | MARKET BRAND - CHEVROLET |
| XCG | TIRE ALL - 275/50R22 SL 111H BW AL3 |
| XCI | TIRE ALL - 275/60R20 SL 115T BW AL2 VAR 1 |
| XCQ | TIRE SPARE - 265/70R17 SL 115S BW SPR VAR1 |
| XCS | TIRE ALL - 275/55R20 SL 113V BW AL3 VAR1 |
| XD6 | ACCESSORY TIRE - TIRE ALL-275/50R22 SL 111H BW AL3 |
| XL8 | FREQUENCIES RATING - 433 MHZ |
| XLE | SALES PACKAGE - LUXURY EDITION |
| Y55 | CONNECTED CAMERA - EXTERIOR, INTERIOR |
| Y55 | CONSOLE - FRT COMPT, FLOOR, ARM REST SLIDING, UP LEVEL |
| Y55 | HEADLAMP LEVEL - UPPER |
| Y55 | HEATER SEAT - REAR |
| Y55 | LAMP REAR COMBO - UPLEVEL |
| Y55 | MEMORY - SEAT ADJUSTER, MIRROR, POWER, DRIVER, PERSONALIZATION |
| Y55 | MIRROR O/S - LH & RH, RC, ELEC, HEAT, AUX WFOV/DRVR, PWRFOLD, LT SENS DRVR, CNVX/PASS, TURN SIG IND |
| Y55 | MIRROR O/S - LH & RH, RC, ELEC, HEAT, FLAT/DRVR, PWRFOLD, LT SENS DRVR, CNVX/PASS, TURN SIG IND, PERM LIGHT |
| Y55 | SEAT RR - BENCH, 60/40 POWER CONFIGURABLE |
| Y55 | SEAT RR - BUCKET, POWER CONFIGURABLE |
| Y55 | SEAT THIRD ROW - 60/40 BENCH, POWER FOLD |
| Y55 | SPEAKER SYSTEM - PREMIUM AUDIO, BRANDED SURROUND AMPLIFIER |
| Y55 | STEERING WHEEL HEAT - AUTOMATIC |
| Y55 | SALES PACKAGE - COMFORT |
| YF5 | CERTIFICATION - EMISSION, CALIFORNIA |
| Z56 | CHASSIS PACKAGE - POLICE CONVERSION |
| Z60 | CHASSIS PACKAGE - HIGH PERFORMANCE |
| Z66 | AXLE POSITRACTION - LIMITED SLIP, ELECTRONIC |
| Z66 | BRK APL CTRL FEATURE - INTEGRATED TRAILER BRAKE |
| Z66 | CHASSIS PACKAGE - MAGNERIDE |
| Z66 | IMAGE ADJUSTMENT - HITCH VIEW |
| Z66 | INDICATOR - SMART TRAILER INTEGRATION |
| Z66 | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST, EXTENDED TRAILER VIEW |
| Z6E | AXLE POSITRACTION - LIMITED SLIP, ELECTRONIC |
| Z6E | CHASSIS PACKAGE - MAGNERIDE |
| Z6E | SUSPENSION SYSTEM - FRT & RR, AIR |
| Z6E | SALES PACKAGE - OFF ROAD TECHNOLOGY |
| Z82 | TRAILER PROVISIONS - SPECIAL EQUIPMENT, H.D. |
| Z95 | CHASSIS PACKAGE - MAGNERIDE |
| ZL6 | IMAGE ADJUSTMENT - HITCH VIEW |
| ZL6 | INDICATOR - SMART TRAILER INTEGRATION |
| ZL6 | SIDE ACTIVE SAFETY - OBSTACLE DETECTION ENHANCED, STEERING ASSIST, EXTENDED TRAILER VIEW |
| ZL6 | SALES PACKAGE - TRAILER INTEGRATION |
| ZM1 | COOLING SYSTEM - EXTRA CAPACITY |
| ZM1 | TRAILERING ASSIST - GUIDELINES |
| ZM1 | TRANSFER CASE - ACTIVE, TWO SPEED, SWITCH ACTIVATED, ALUM |
| ZM1 | VISION TRAILER - INSIDE VIEW, REAR VIEW |
| ZM1 | SALES PACKAGE - ENHANCED TRAILER VIEW |
| ZW7 | CHASSIS PACKAGE - PREMIUM SMOOTH RIDE |

# Section 1

# Body Hardware and Trim

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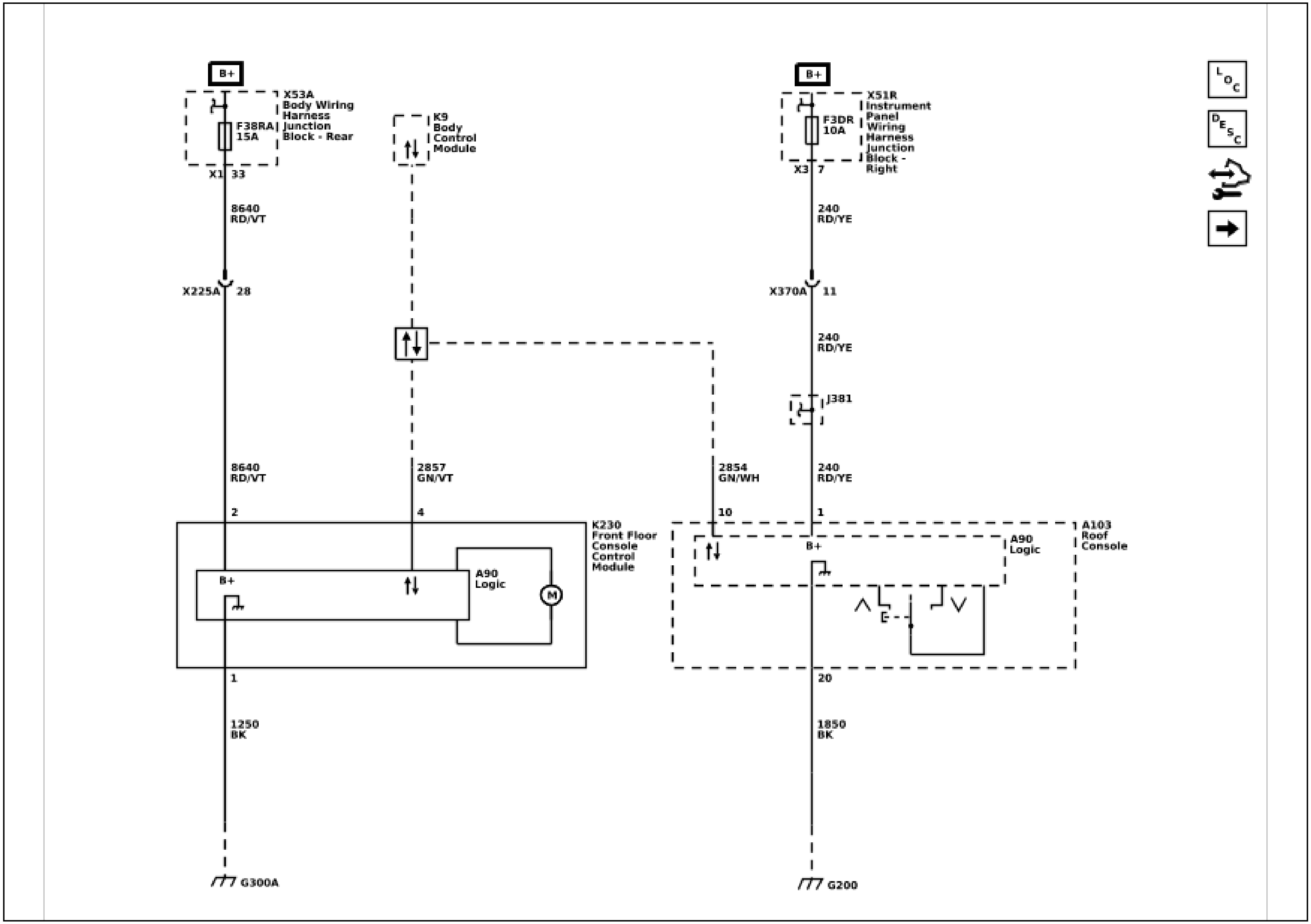
**Description and Operation** ..................... 1-5

# Body Hardware and Trim

## Instrument Panel and Console Trim

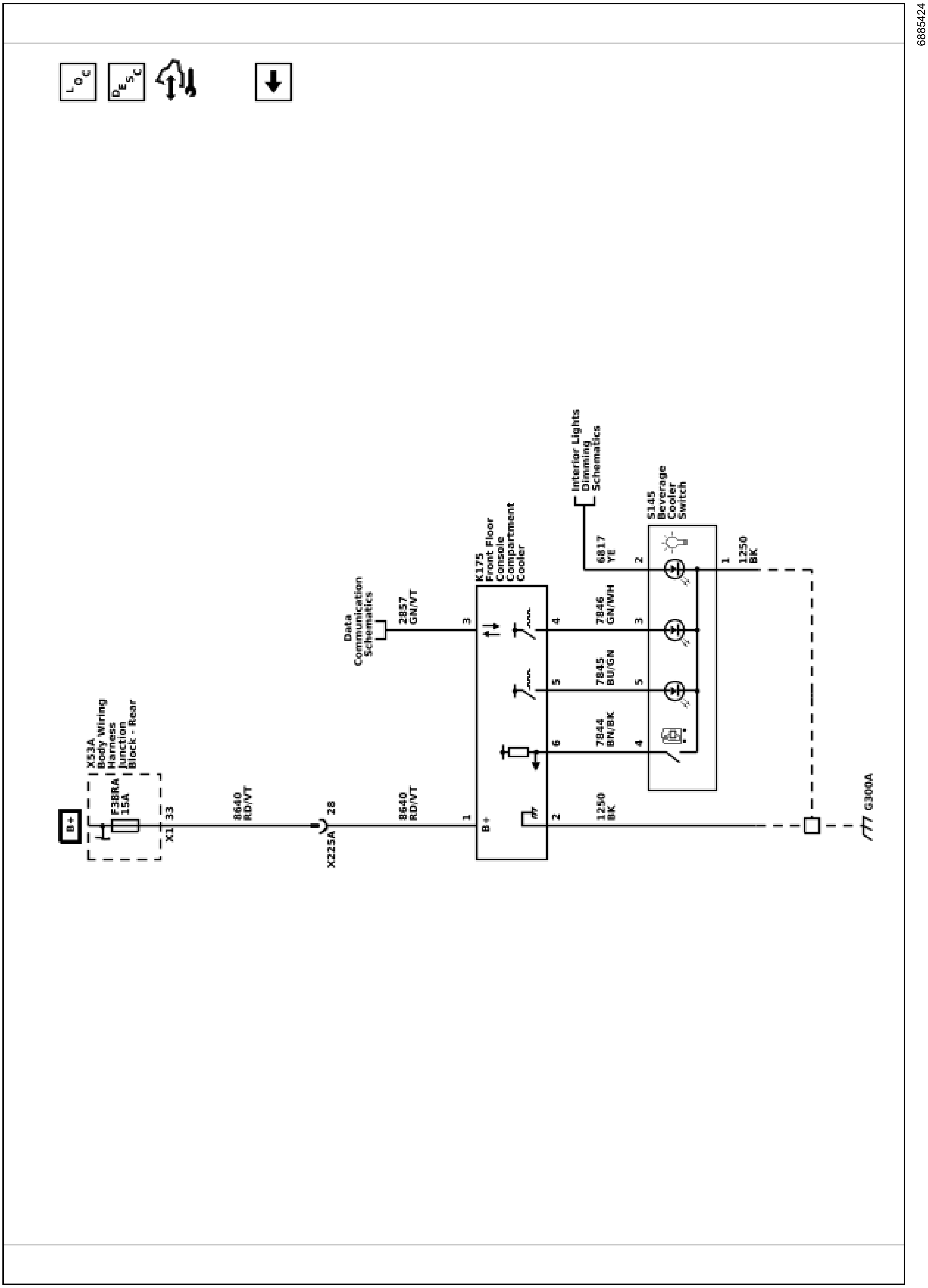
### Schematic and Routing Diagrams

## Instrument Panel and Console Schematics (Sliding Floor Console (DCH))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F38RA
15A
X1 33
8640
RD/VT
X225A 28
8640
RD/VT
2
K9
Body
Control
Module
2857
GN/VT
4
K230
Front Floor
Console
Control
Module
B+
A90
Logic
M
1
1250
BK
G300A
B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F3DR
10A
X3 7
240
RD/YE
X370A 11
240
RD/YE
J381
240
RD/YE
1
2854
GN/WH
10
A90
Logic
B+
A103
Roof
Console
20
1850
BK
G200

6885423

## Instrument Panel and Console Schematics (Front Floor Console Compartment Cooler (DCK))


6885424
LOC
DESC
B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F38RA
15A
X1 33
8640
RD/VT
X225A
28
8640
RD/VT
1
B+
K175
Front Floor
Console
Compartment
Cooler
Data
Communication
Schematics
2857
GN/VT
3
4
5
6
2
7846
GN/WH
7845
BU/GN
7844
BN/BK
1250
BK
3
5
4
S145
Beverage
Cooler
Switch
Interior Lights
Dimming
Schematics
6817
YE
2
1
1250
BK
G300A

# Description and Operation

## Section 2

# Body Systems

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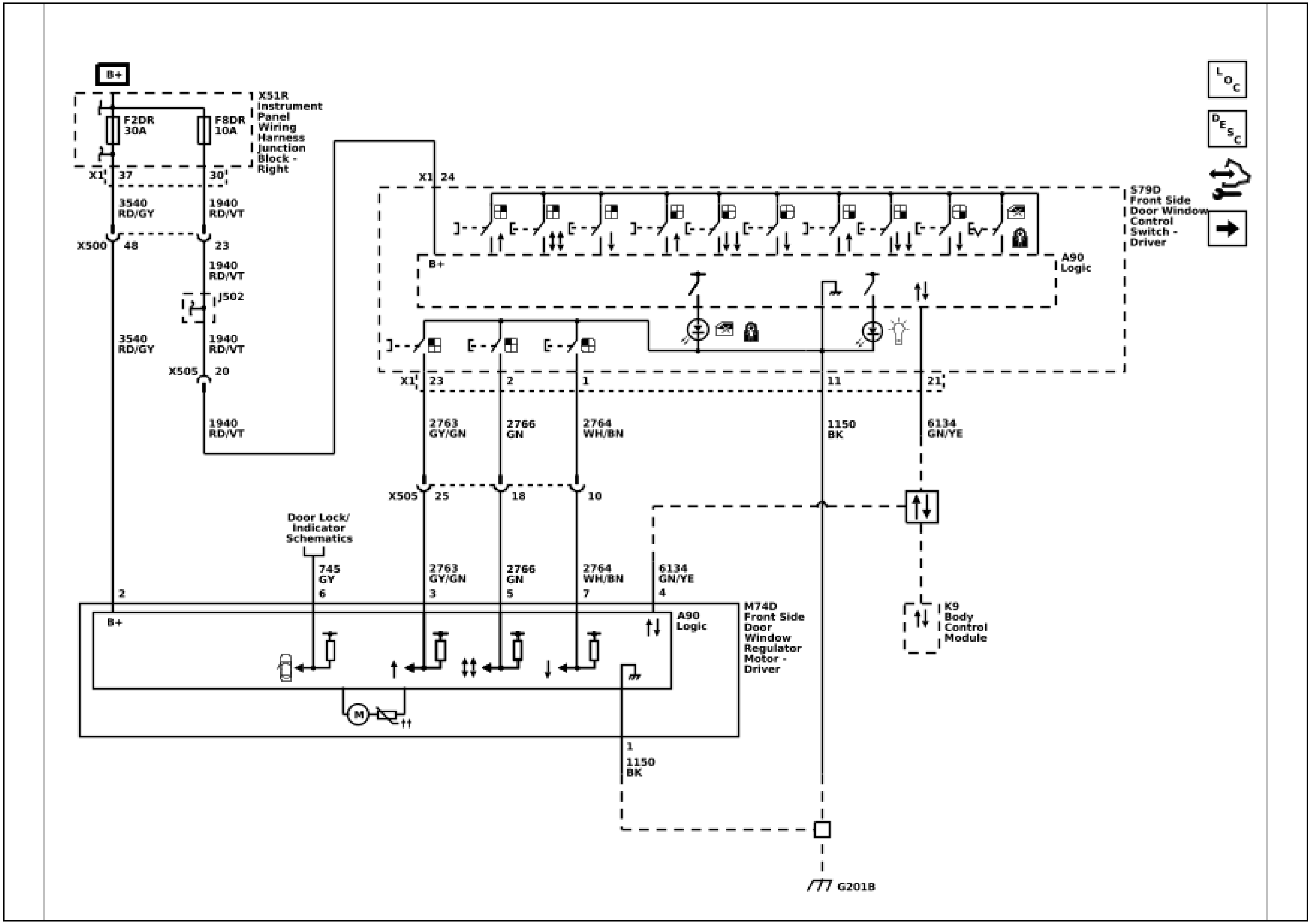
# Body Systems

## Fixed and Moveable Windows

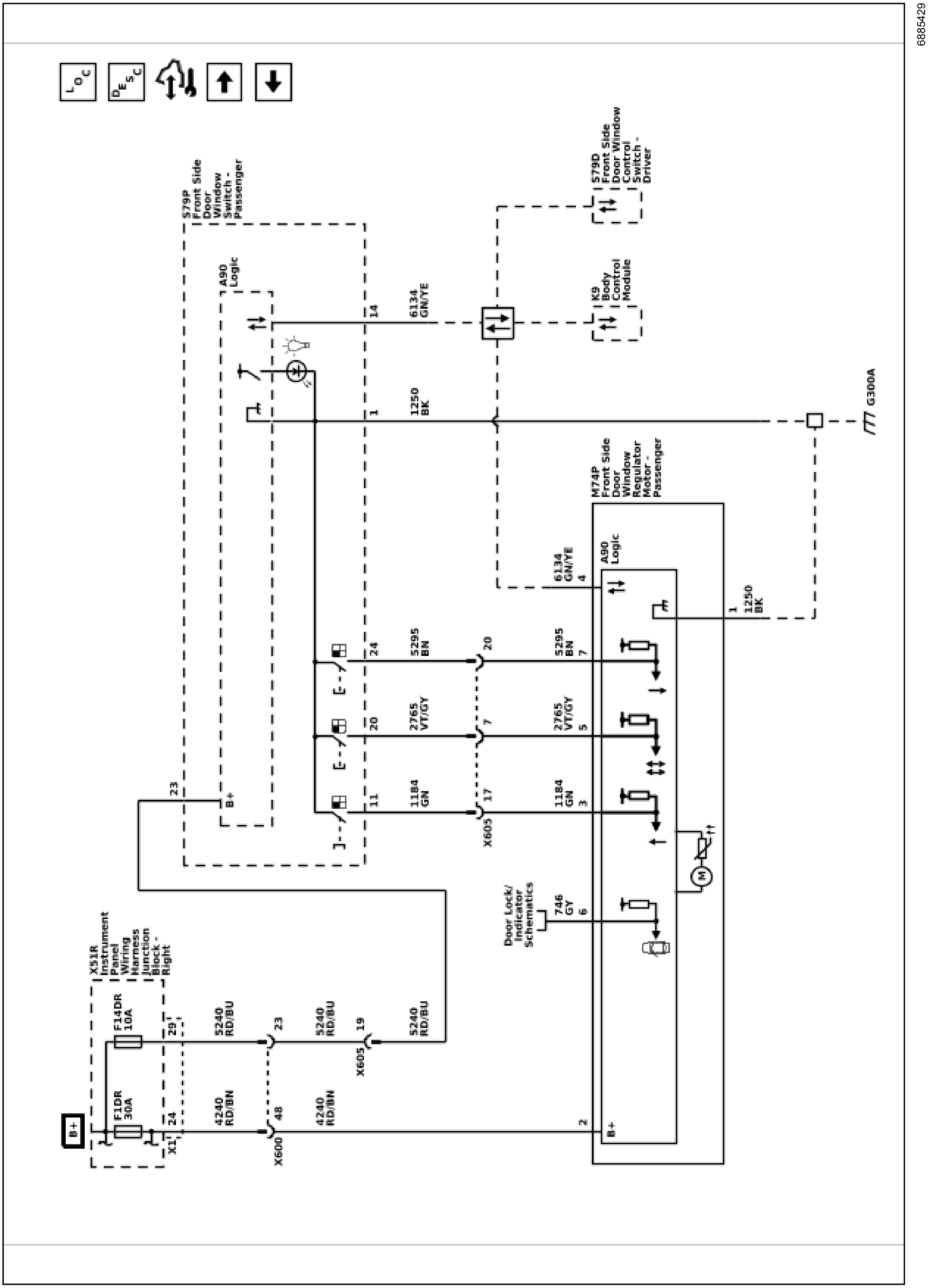
### Schematic and Routing Diagrams

## Moveable Window Schematics (Driver)

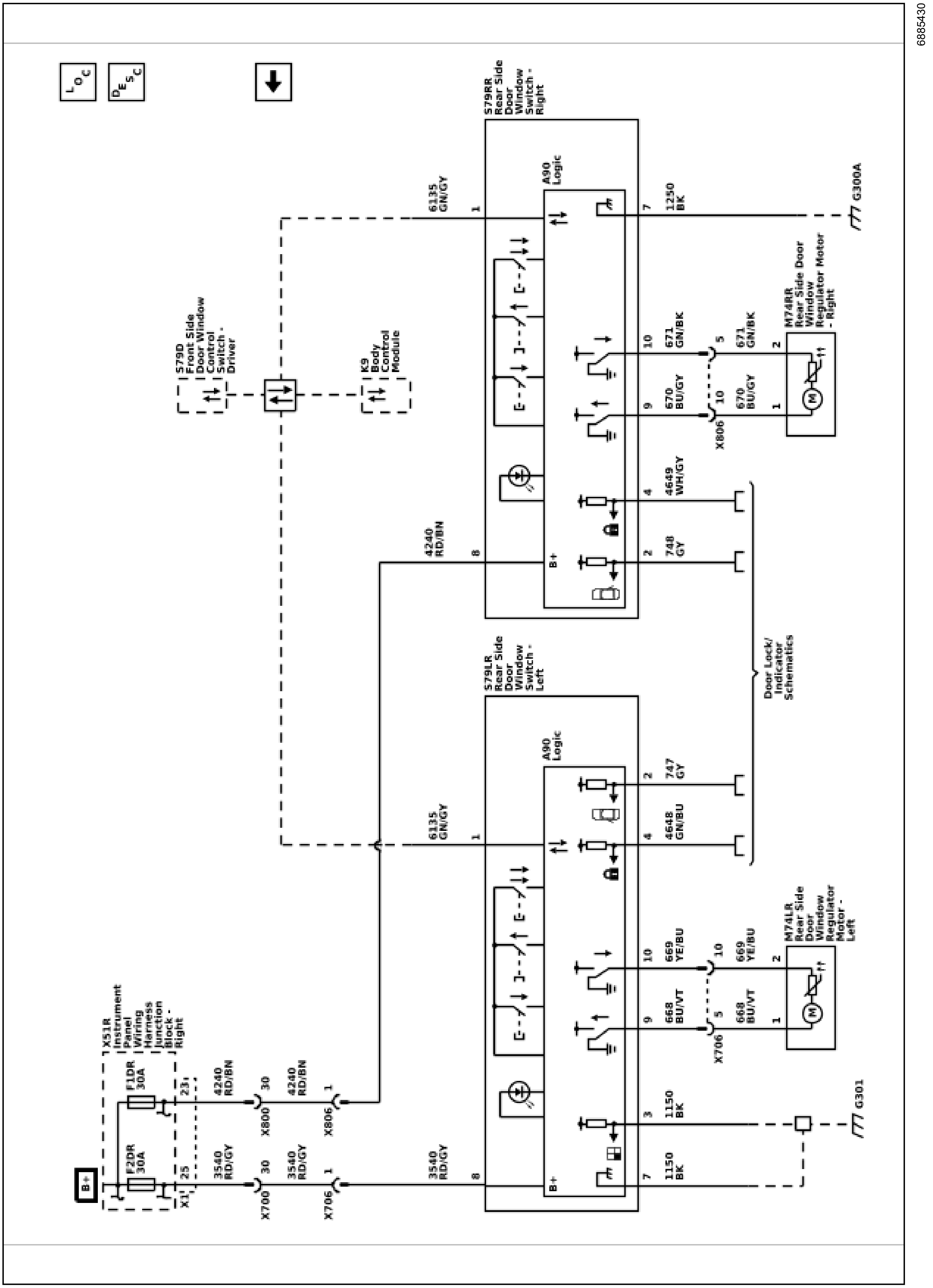

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F2DR 30A
F8DR 10A
X1 37
30
3540 RD/GY
1940 RD/VT
X500 48
23
1940 RD/VT
J502
3540 RD/GY
1940 RD/VT
X505 20
1940 RD/VT
X1 24
S79D Front Side Door Window Control Switch - Driver
B+
A90 Logic
X1 23
2
1
11
21
2763 GY/GN
2766 GN
2764 WH/BN
1150 BK
6134 GN/YE
X505 25
18
10
Door Lock/ Indicator Schematics
745 GY
6
2763 GY/GN
3
2766 GN
5
2764 WH/BN
7
6134 GN/YE
4
2
B+
A90 Logic
M74D Front Side Door Window Regulator Motor - Driver
M
1
1150 BK
K9 Body Control Module
G201B

6885428

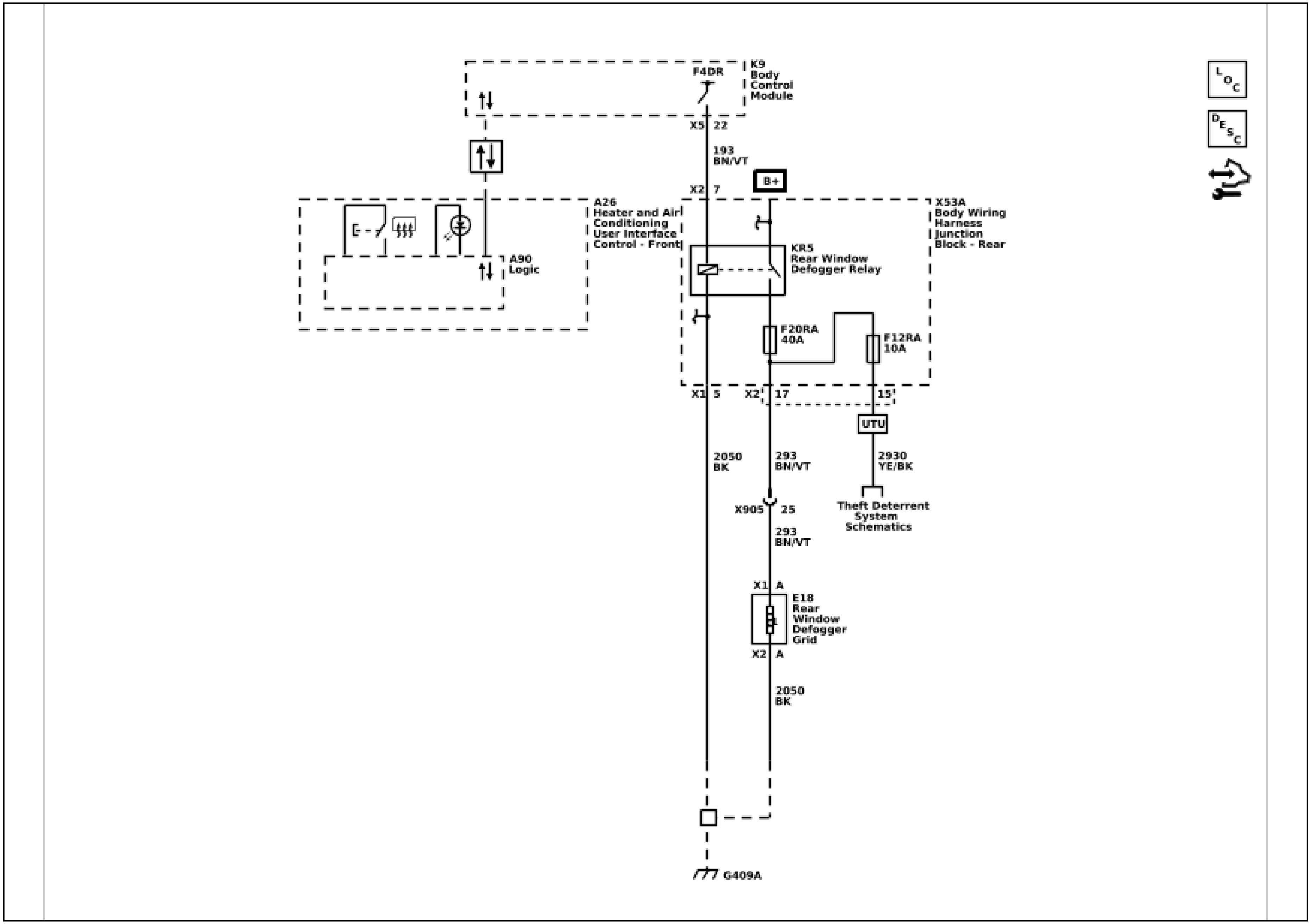
## Moveable Window Schematics (Passenger)


6885429
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F1DR 30A
F14DR 10A
X1
24
29
4240 RD/BN
5240 RD/BU
X600
48
23
X605
19
S79P Front Side Door Window Switch - Passenger
A90 Logic
B+
23
11
20
24
14
1
1184 GN
2765 VT/GY
5295 BN
1250 BK
6134 GN/YE
17
7
20
K9 Body Control Module
S79D Front Side Door Window Control Switch - Driver
G300A
M74P Front Side Door Window Regulator Motor - Passenger
A90 Logic
6134 GN/YE 4
1250 BK 1
5295 BN 7
2765 VT/GY 5
1184 GN 3
746 GY 6
Door Lock/ Indicator Schematics
2
B+
M

## Moveable Window Schematics (Rear Windows)


6885430
B+
F2DR
30A
F1DR
30A
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
25
23
X1
3540
RD/GY
4240
RD/BN
X700
30
X800
30
X706
1
X806
1
S79D
Front Side
Door Window
Control
Switch -
Driver
K9
Body
Control
Module
6135
GN/GY
S79LR
Rear Side
Door
Window
Switch -
Left
A90
Logic
B+
8
1
7
1150
BK
3
1150
BK
G301
9
668
BU/VT
10
669
YE/BU
X706
5
668
BU/VT
10
669
YE/BU
M74LR
Rear Side
Door
Window
Regulator
Motor -
Left
1
2
M
2
747
GY
4
4648
GN/BU
Door Lock/
Indicator
Schematics
S79RR
Rear Side
Door
Window
Switch -
Right
A90
Logic
8
4240
RD/BN
B+
2
748
GY
4
4649
WH/GY
9
670
BU/GY
10
671
GN/BK
X806
10
670
BU/GY
5
671
GN/BK
M74RR
Rear Side Door
Window
Regulator Motor
- Right
1
2
M
1
6135
GN/GY
7
1250
BK
G300A

## Defogger Schematics (Defogger)


L O C
D E S C
F4DR
K9
Body
Control
Module
X5 22
193
BN/VT
B+
X2 7
A26
Heater and Air
Conditioning
User Interface
Control - Front
A90
Logic
X53A
Body Wiring
Harness
Junction
Block - Rear
KR5
Rear Window
Defogger Relay
F20RA
40A
F12RA
10A
X1 5
X2 17
15
UTU
2050
BK
293
BN/VT
2930
YE/BK
Theft Deterrent
System
Schematics
X905 25
293
BN/VT
X1 A
E18
Rear
Window
Defogger
Grid
X2 A
2050
BK
G409A
6885431

# Description and Operation

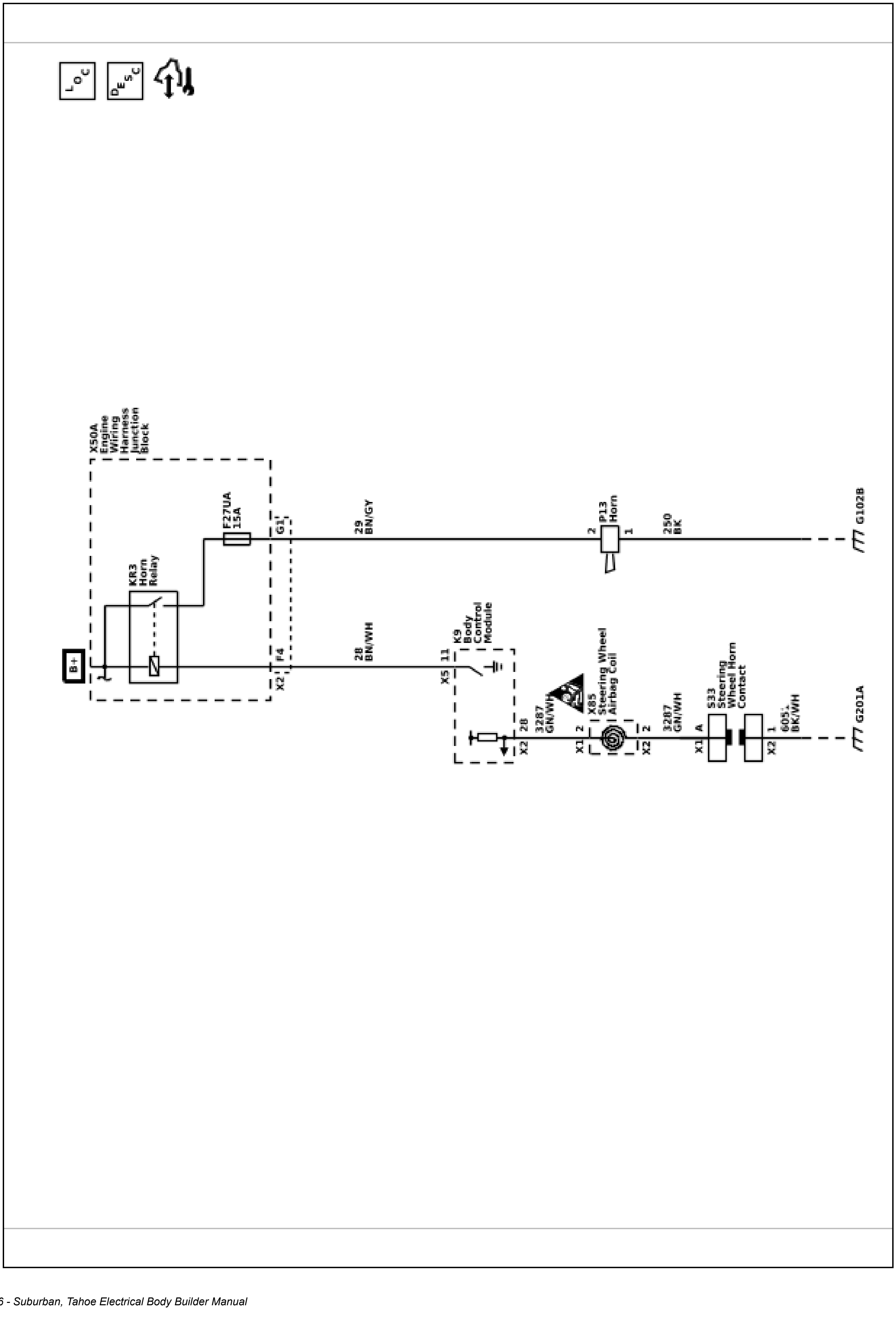
## Stationary Window Description

Most stationary windows, specifically windshields, are retained to the body with urethane adhesive which adheres the window to the body, increasing structural integrity. The reinstallation of the windows with urethane adhesive requires complete replacement of the urethane adhesive bead, and is known as the full cut method.

# Horns and Pedestrian Alerts

## Schematic and Routing Diagrams

## Horn Schematics (Horn)

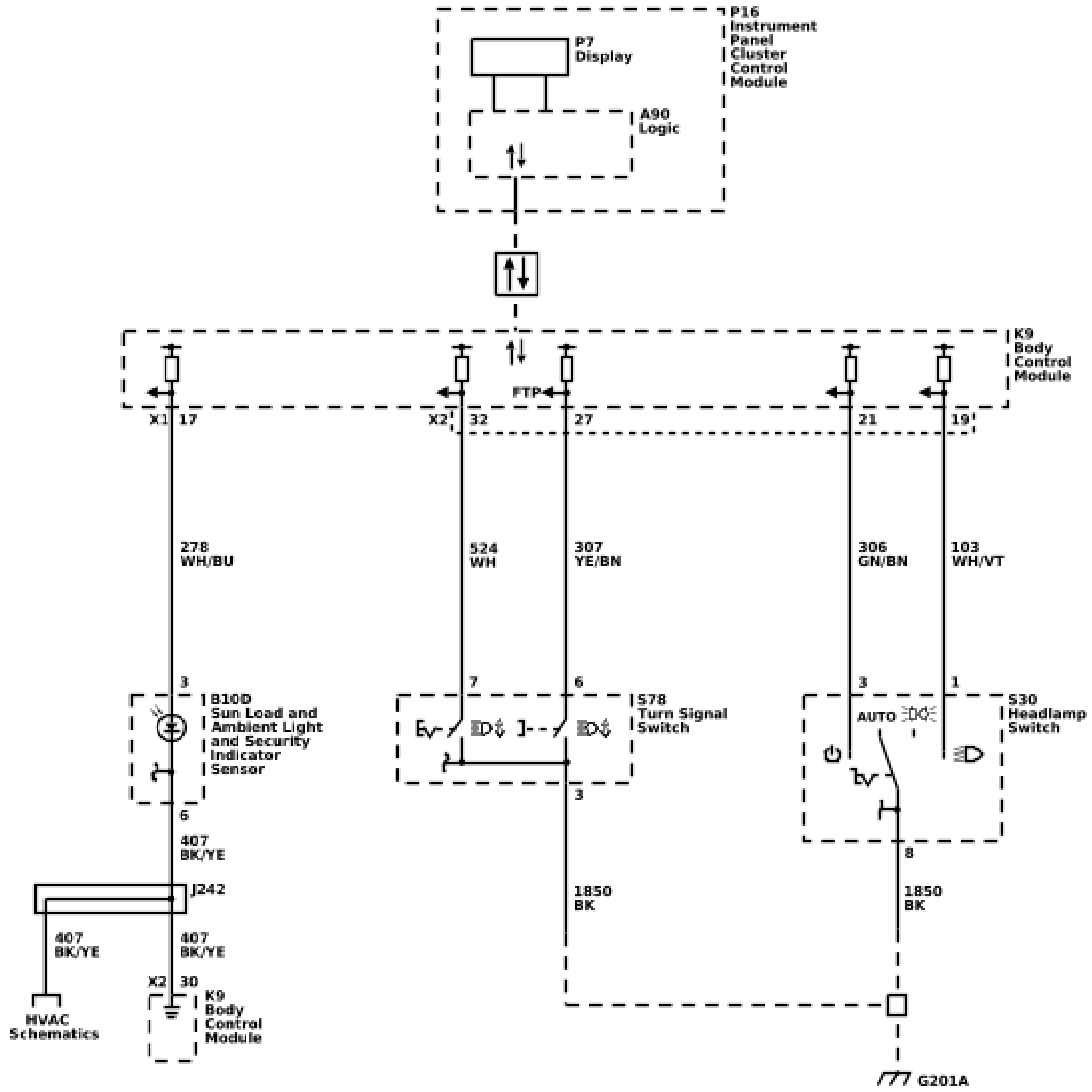

6885432
LOC
DESC
B+
X50A Engine Wiring Harness Junction Block
KR3 Horn Relay
F27UA 15A
G1
X2
F4
29 BN/GY
28 BN/WH
P13 Horn
2
1
250 BK
G102B
K9 Body Control Module
X5 11
X2 28
3287 GN/WH
X85 Steering Wheel Airbag Coil
X1 2
X2 2
3287 GN/WH
S33 Steering Wheel Horn Contact
X1 A
X2 1
6051 BK/WH
G201A

# Description and Operation

# Lighting

## Schematic and Routing Diagrams

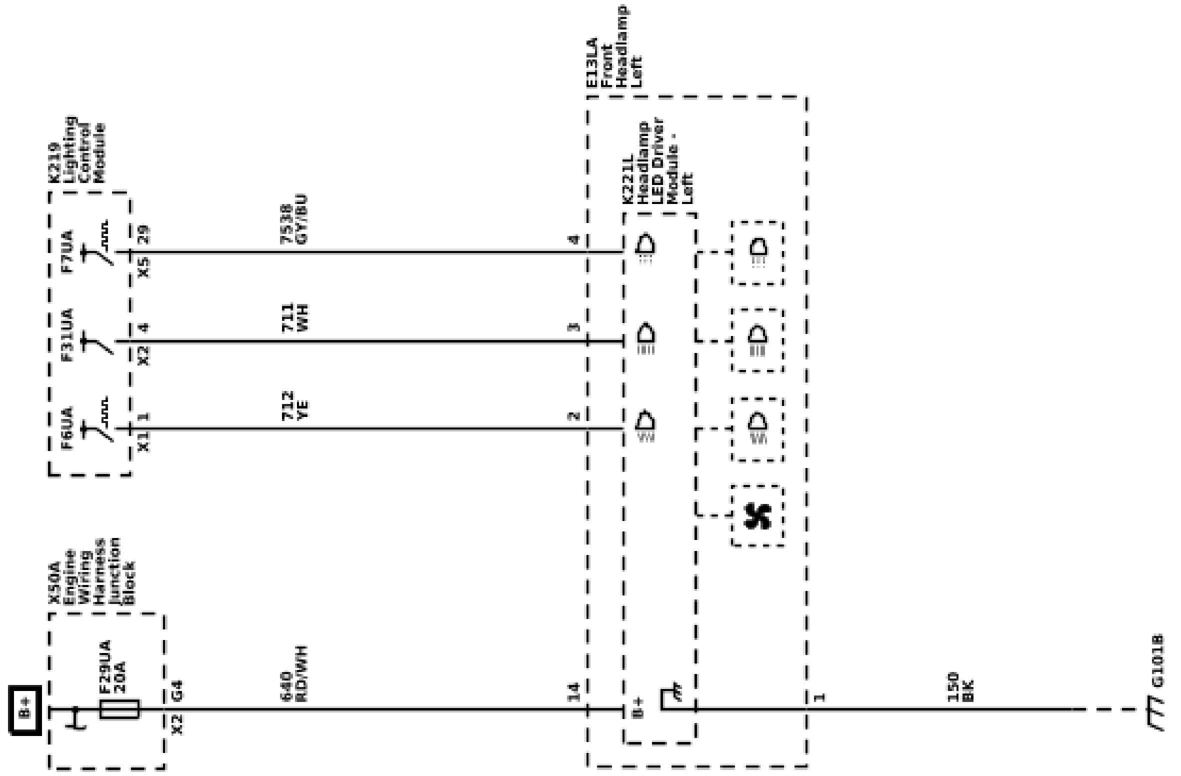
## Headlights/Daytime Running Lights (DRL) Schematics (Controls and Indicators)


P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
K9
Body
Control
Module
FTP
X1 17
X2 32
27
21
19
278
WH/BU
524
WH
307
YE/BN
306
GN/BN
103
WH/VT
3
B10D
Sun Load and
Ambient Light
and Security
Indicator
Sensor
6
7
6
S78
Turn Signal
Switch
3
3
1
AUTO
S30
Headlamp
Switch
8
407
BK/YE
J242
407
BK/YE
407
BK/YE
X2 30
K9
Body
Control
Module
HVAC
Schematics
1850
BK
1850
BK
G201A

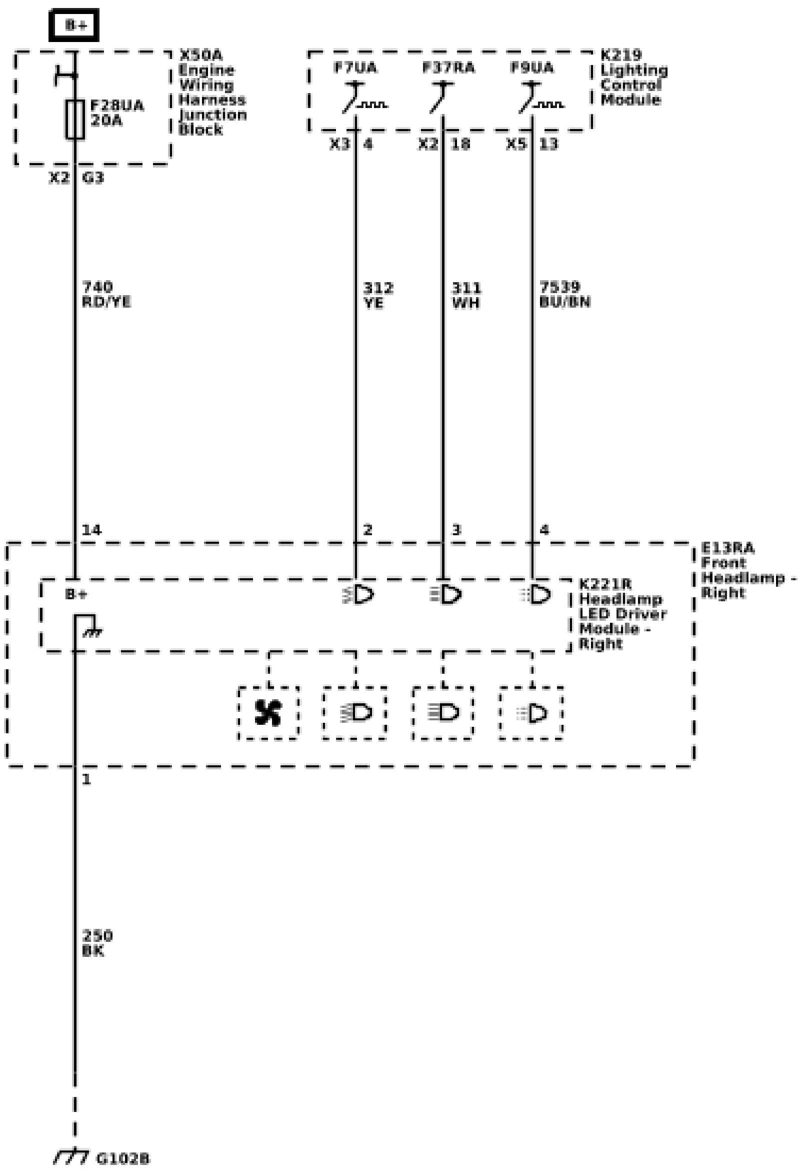
6885433

6885434

## Headlights/Daytime Running Lights (DRL) Schematics (Headlamps and Daytime Running Lamps - Left)

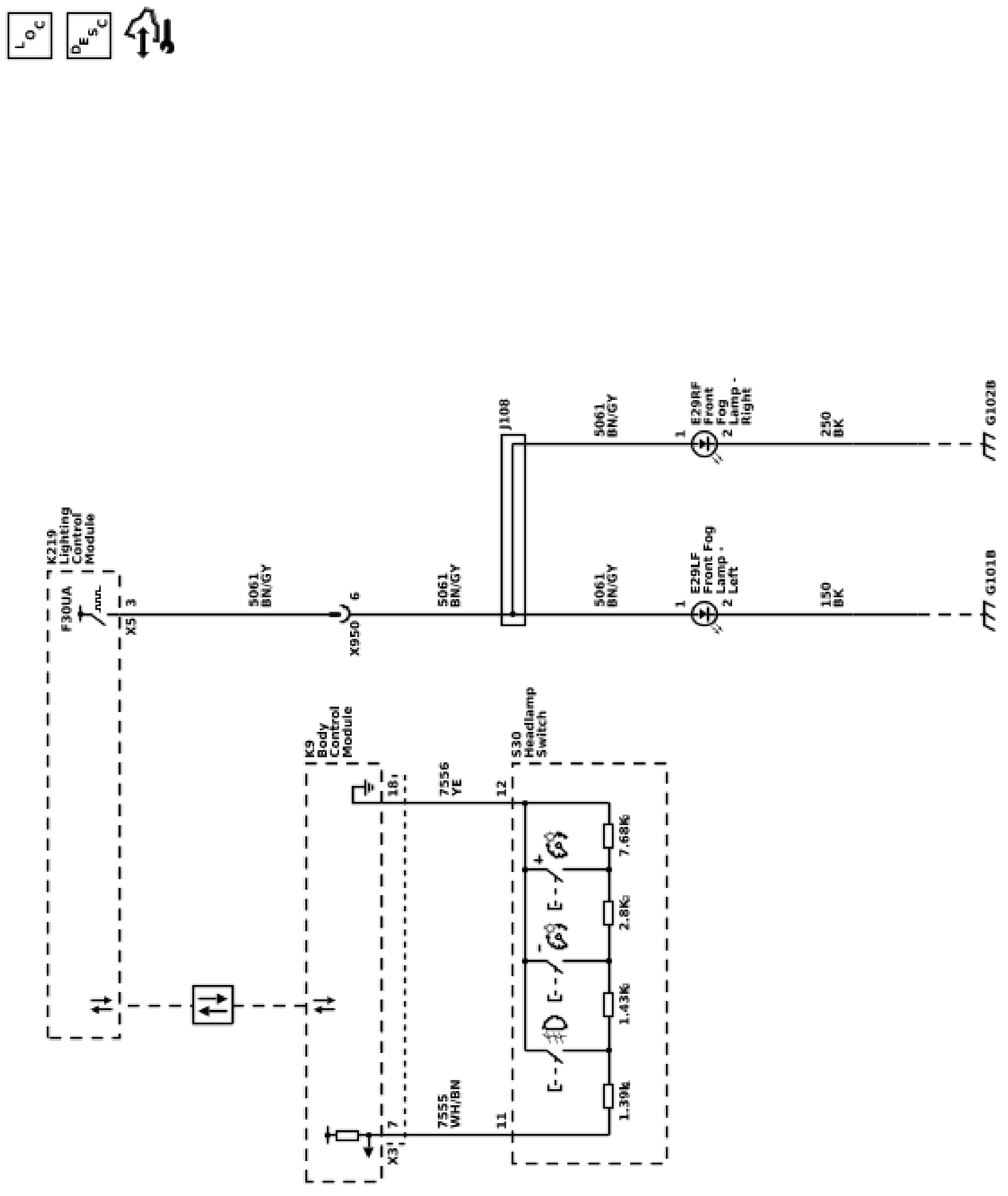

B+
X50A Engine Wiring Harness Junction Block
F29UA 20A
X2 G4
640 RD/WH
K219 Lighting Control Module
F6UA
X1 1
712 YE
F31UA
X2 4
711 WH
F7UA
X5 29
7538 GY/BU
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
2
3
4
14
B+
1
150 BK
G101B

## Headlights/Daytime Running Lights (DRL) Schematics (Headlamps and Daytime Running Lamps - Right)

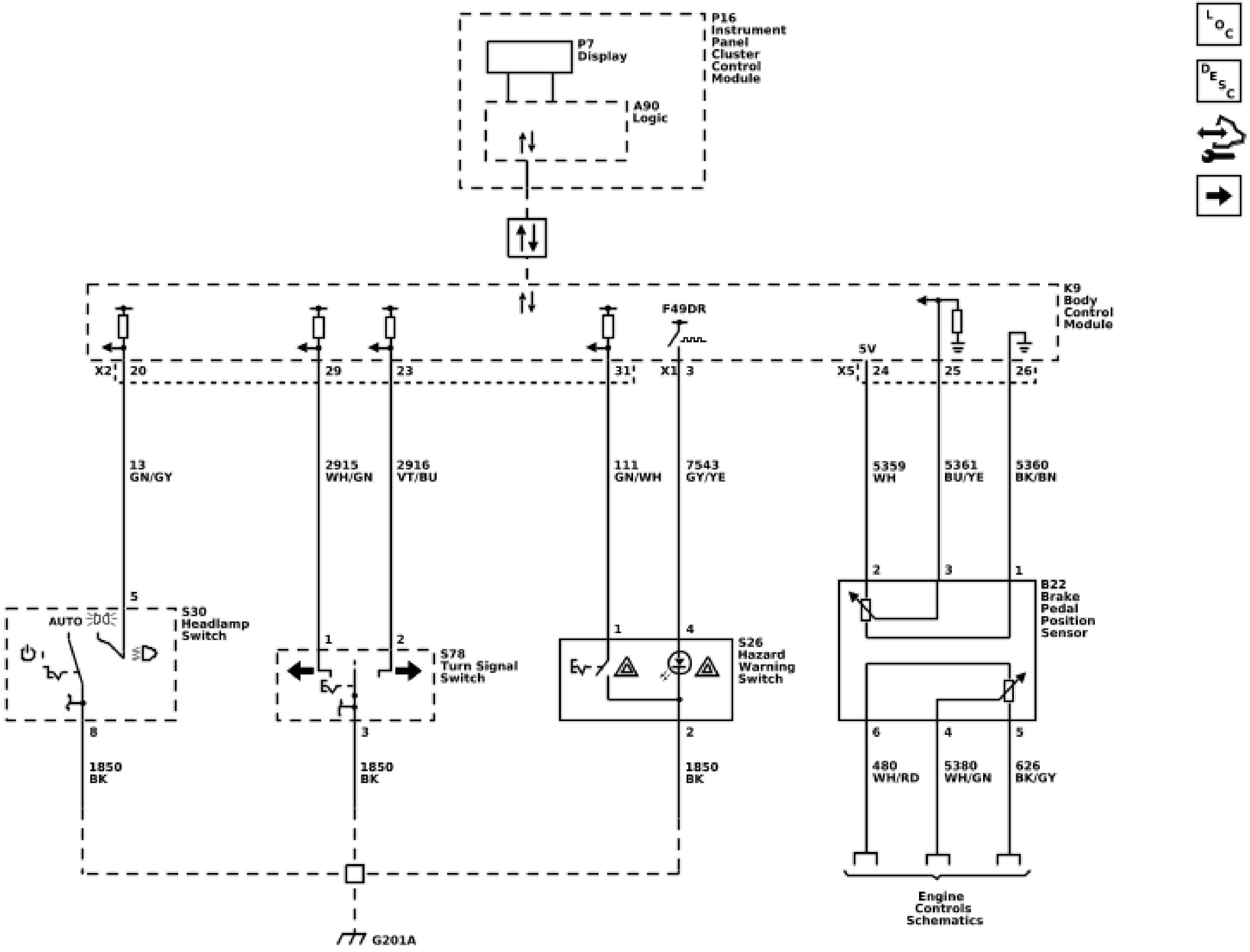

B+
X50A Engine Wiring Harness Junction Block
F28UA 20A
X2 G3
740 RD/YE
K219 Lighting Control Module
F7UA
F37RA
F9UA
X3 4
X2 18
X5 13
312 YE
311 WH
7539 BU/BN
14
2
3
4
E13RA Front Headlamp - Right
B+
K221R Headlamp LED Driver Module - Right
1
250 BK
G102B

6885435

## Fog Lights Schematics (Fog Lamps (T40))

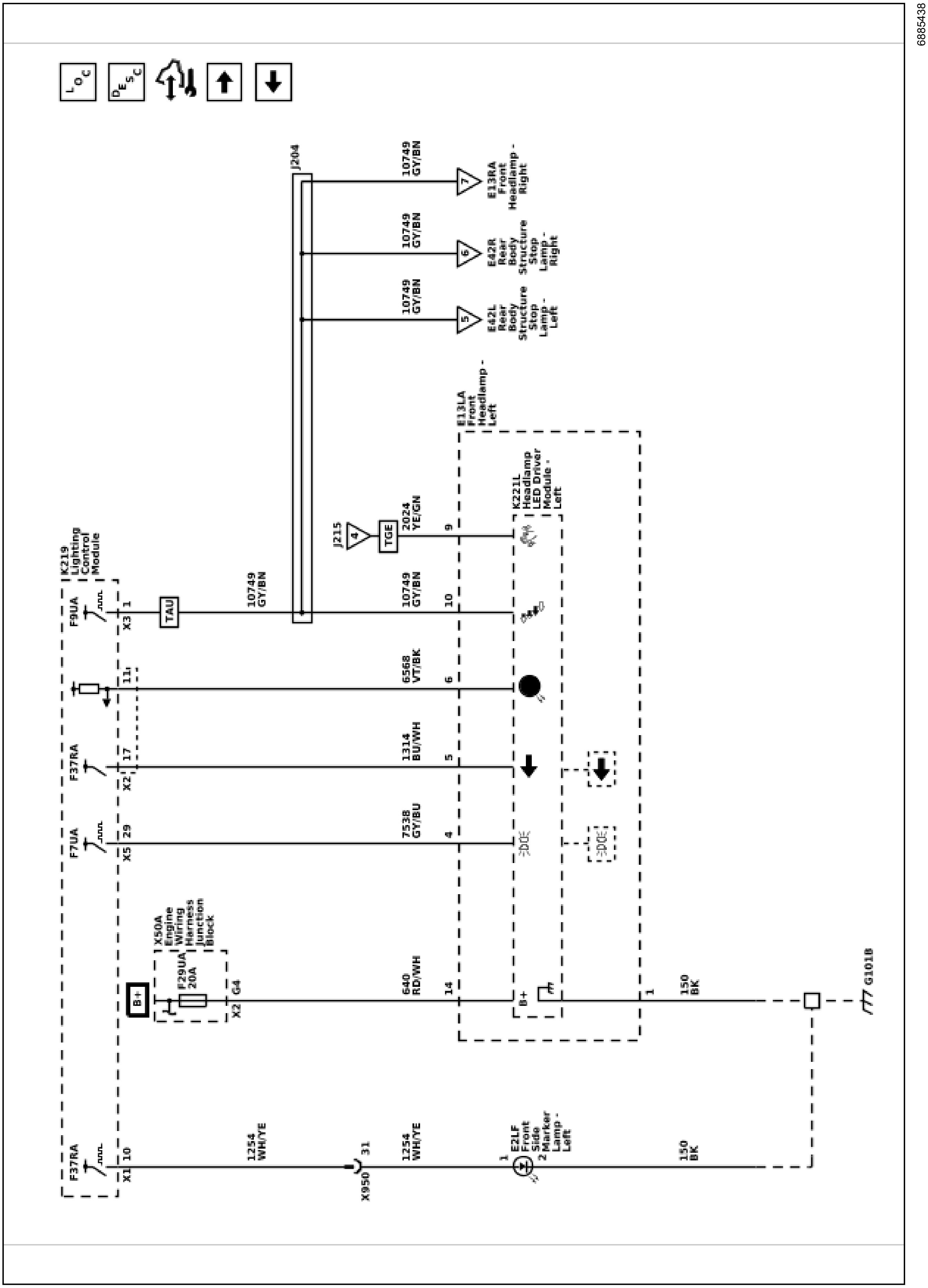

6885436
L O C
D E S C
K219 Lighting Control Module
F30UA
X5 3
5061 BN/GY
X950 6
5061 BN/GY
J108
5061 BN/GY
1
E29LF Front Fog Lamp - Left
2
150 BK
G101B
5061 BN/GY
1
E29RF Front Fog Lamp - Right
2
250 BK
G102B
K9 Body Control Module
X3
18
7
7556 YE
7555 WH/BN
S30 Headlamp Switch
12
11
+
-
7.68k
2.8k
1.43k
1.39k

## Exterior Lights Schematics (Controls and Indicators)

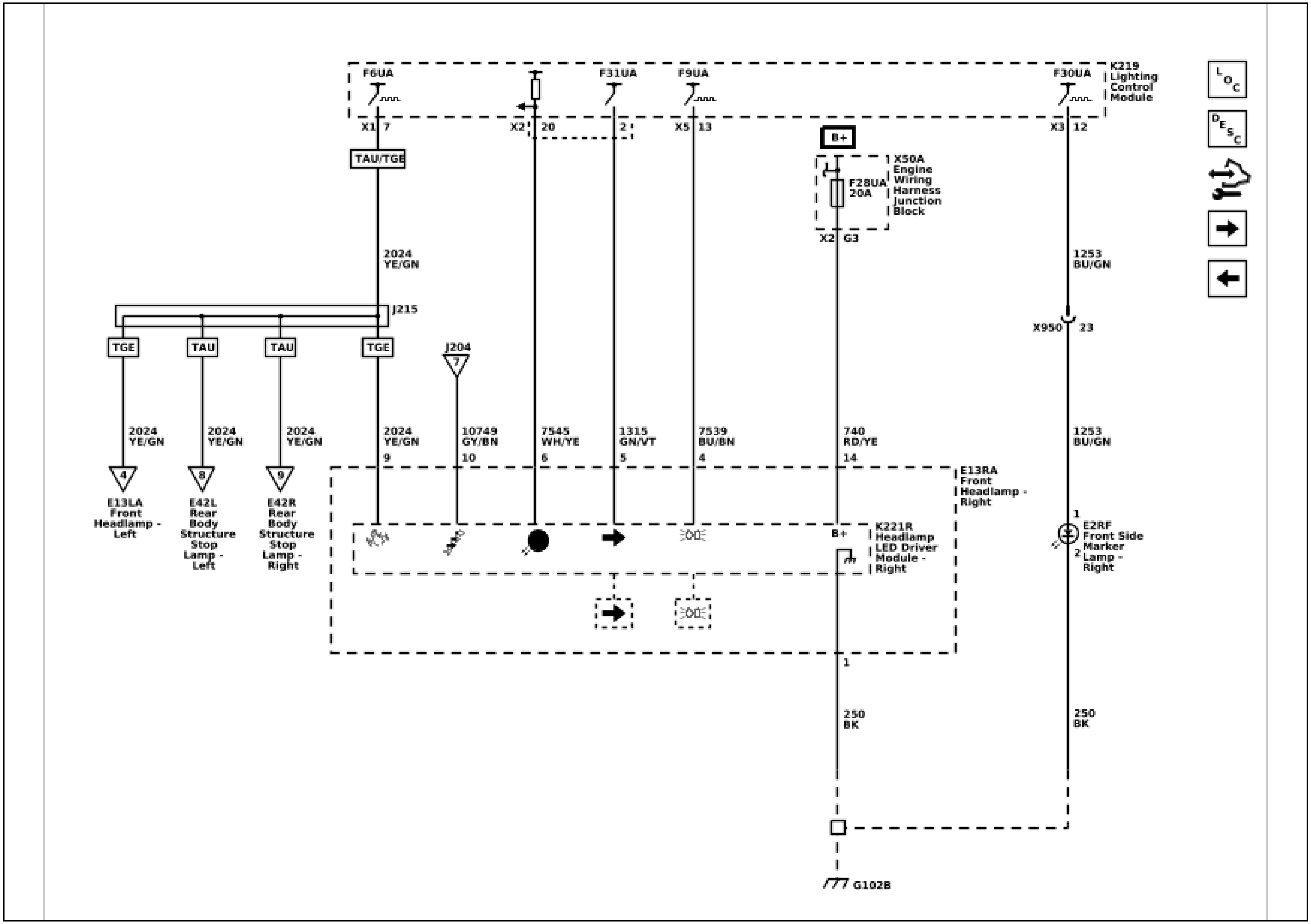

P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
K9
Body
Control
Module
F49DR
5V
X2 20
29
23
31
X1 3
X5 24
25
26
13
GN/GY
2915
WH/GN
2916
VT/BU
111
GN/WH
7543
GY/YE
5359
WH
5361
BU/YE
5360
BK/BN
5
AUTO
S30
Headlamp
Switch
8
1
2
S78
Turn Signal
Switch
3
1
4
S26
Hazard
Warning
Switch
2
2
3
1
B22
Brake
Pedal
Position
Sensor
6
4
5
1850
BK
1850
BK
1850
BK
480
WH/RD
5380
WH/GN
626
BK/GY
Engine
Controls
Schematics
G201A
L O C
D E S C

6885437

## Exterior Lights Schematics (Front Left Lights)

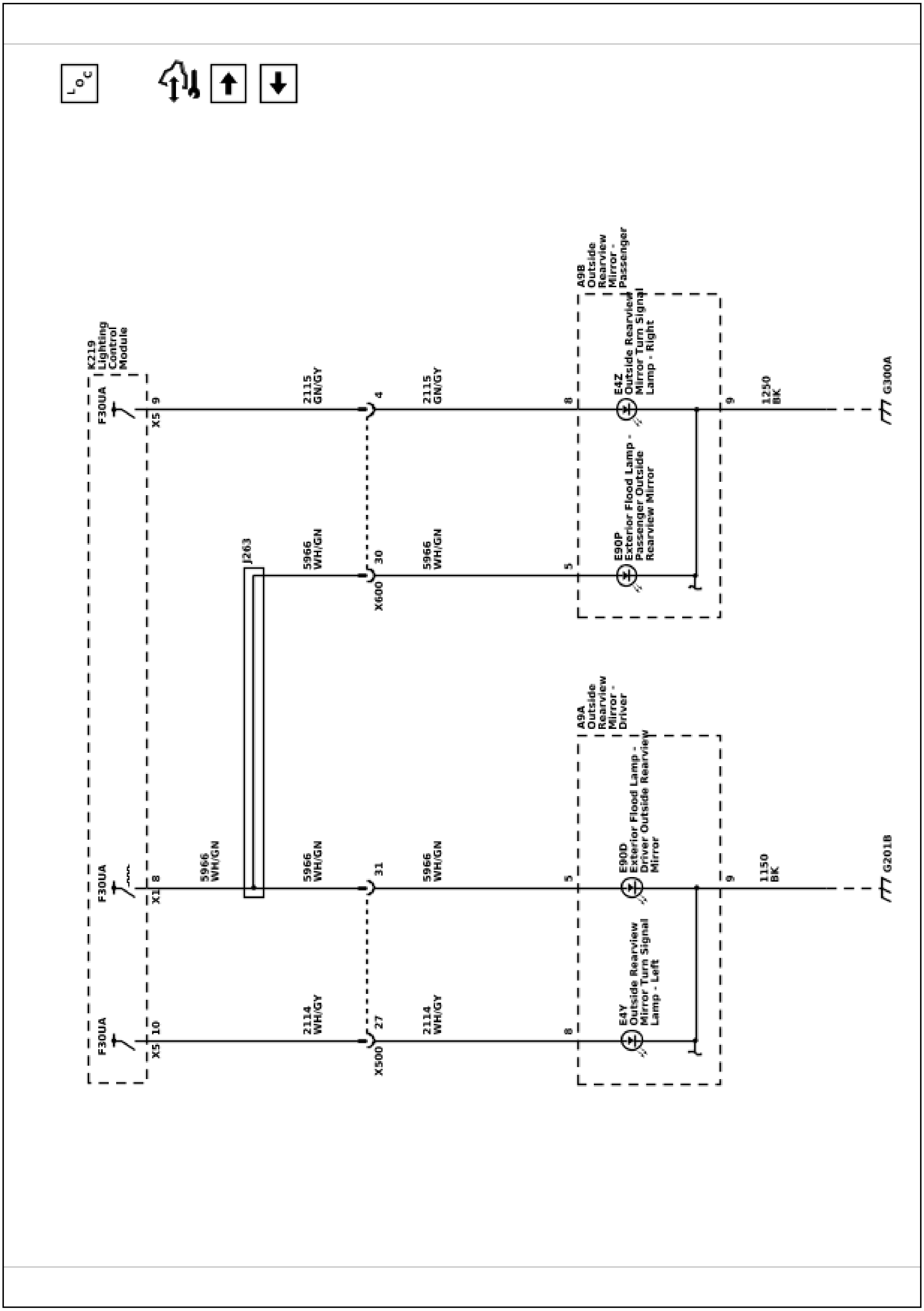

6885438
J204
10749 GY/BN
7
E13RA Front Headlamp - Right
10749 GY/BN
6
E42R Rear Body Structure Stop Lamp - Right
10749 GY/BN
5
E42L Rear Body Structure Stop Lamp - Left
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
J215
4
TGE
2024 YE/GN
9
K219 Lighting Control Module
F9UA
X3 1
TAU
10749 GY/BN
10749 GY/BN
10
11
6568 VT/BK
6
F37RA
X2 17
1314 BU/WH
5
F7UA
X5 29
7538 GY/BU
4
X50A Engine Wiring Harness Junction Block
B+
F29UA 20A
X2 G4
640 RD/WH
14
B+
1
150 BK
G101B
F37RA
X1 10
1254 WH/YE
X950 31
1254 WH/YE
1
E2LF Front Side Marker Lamp - Left
2
150 BK

## Exterior Lights Schematics (Front Right Lights)

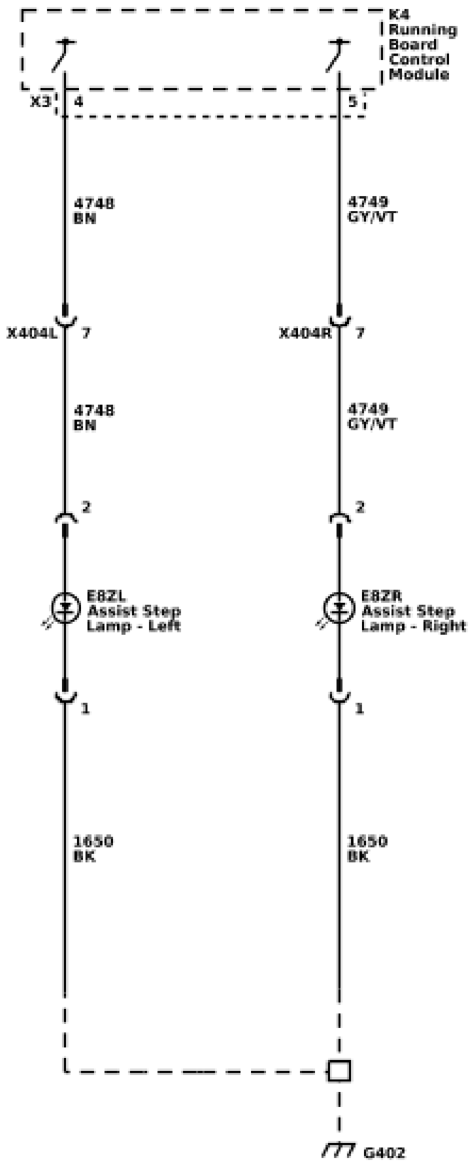

F6UA
F31UA
F9UA
F30UA
K219 Lighting Control Module
X1 7
X2 20
2
X5 13
X3 12
B+
X50A Engine Wiring Harness Junction Block
F28UA 20A
X2 G3
TAU/TGE
2024 YE/GN
J215
1253 BU/GN
X950 23
TGE
TAU
TAU
TGE
J204
7
2024 YE/GN
2024 YE/GN
2024 YE/GN
2024 YE/GN
10749 GY/BN
7545 WH/YE
1315 GN/VT
7539 BU/BN
740 RD/YE
1253 BU/GN
9
10
6
5
4
14
4
8
9
E13LA Front Headlamp - Left
E42L Rear Body Structure Stop Lamp - Left
E42R Rear Body Structure Stop Lamp - Right
E13RA Front Headlamp - Right
B+
K221R Headlamp LED Driver Module - Right
1
E2RF Front Side Marker Lamp - Right
2
1
250 BK
250 BK
G102B

6885439

## Exterior Lights Schematics (Outside Rearview Mirror Lamps (DW6 / DXR))


6885440
K219 Lighting Control Module
F30UA
X5
9
F30UA
X1
8
F30UA
X5
10
2115 GN/GY
5966 WH/GN
5966 WH/GN
2114 WH/GY
J263
4
30
X600
31
27
X500
2115 GN/GY
5966 WH/GN
5966 WH/GN
2114 WH/GY
A9B Outside Rearview Mirror - Passenger
8
E4Z Outside Rearview Mirror Turn Signal Lamp - Right
5
E90P Exterior Flood Lamp - Passenger Outside Rearview Mirror
9
1250 BK
G300A
A9A Outside Rearview Mirror - Driver
5
E90D Exterior Flood Lamp - Driver Outside Rearview Mirror
8
E4Y Outside Rearview Mirror Turn Signal Lamp - Left
9
1150 BK
G201B

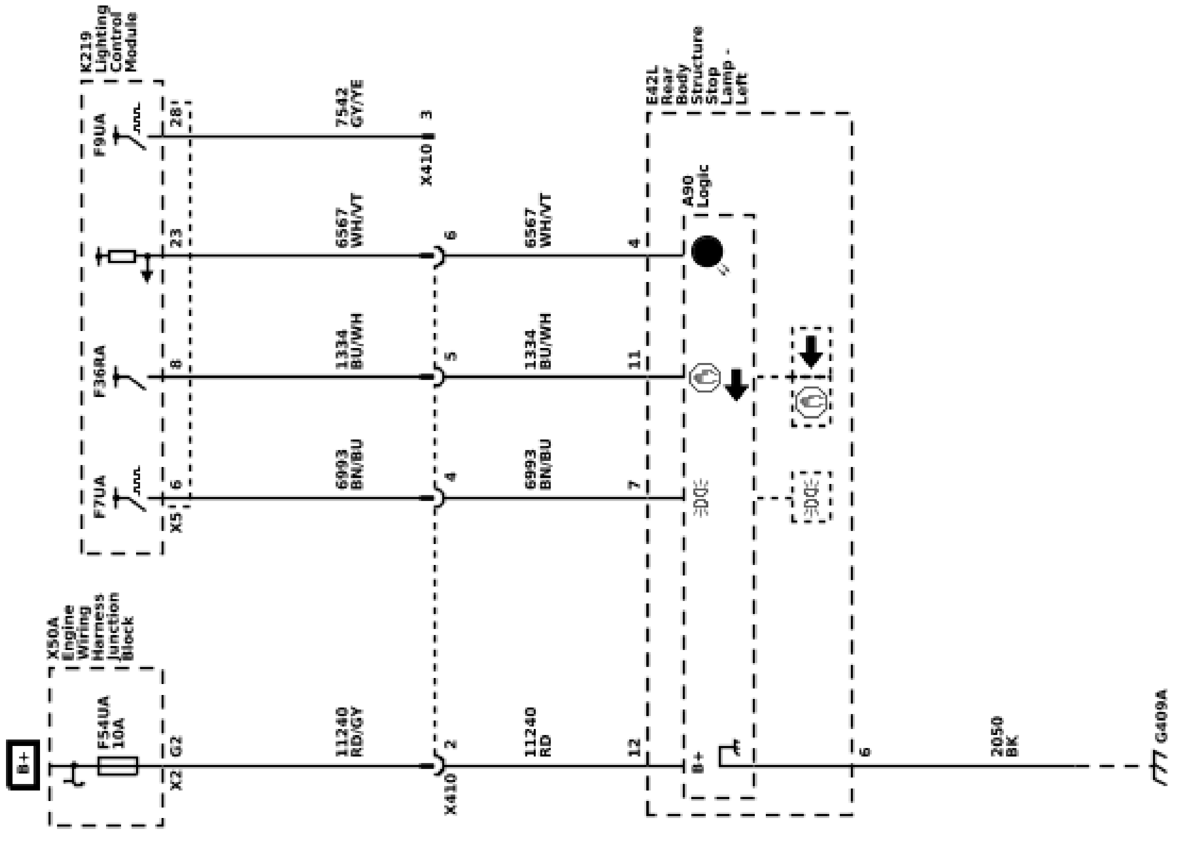
## Exterior Lights Schematics (Running Board Lamps (B3L))


K4
Running
Board
Control
Module
X3
4
5
4748
BN
4749
GY/VT
X404L
7
X404R
7
4748
BN
4749
GY/VT
2
2
E8ZL
Assist Step
Lamp - Left
E8ZR
Assist Step
Lamp - Right
1
1
1650
BK
1650
BK
G402

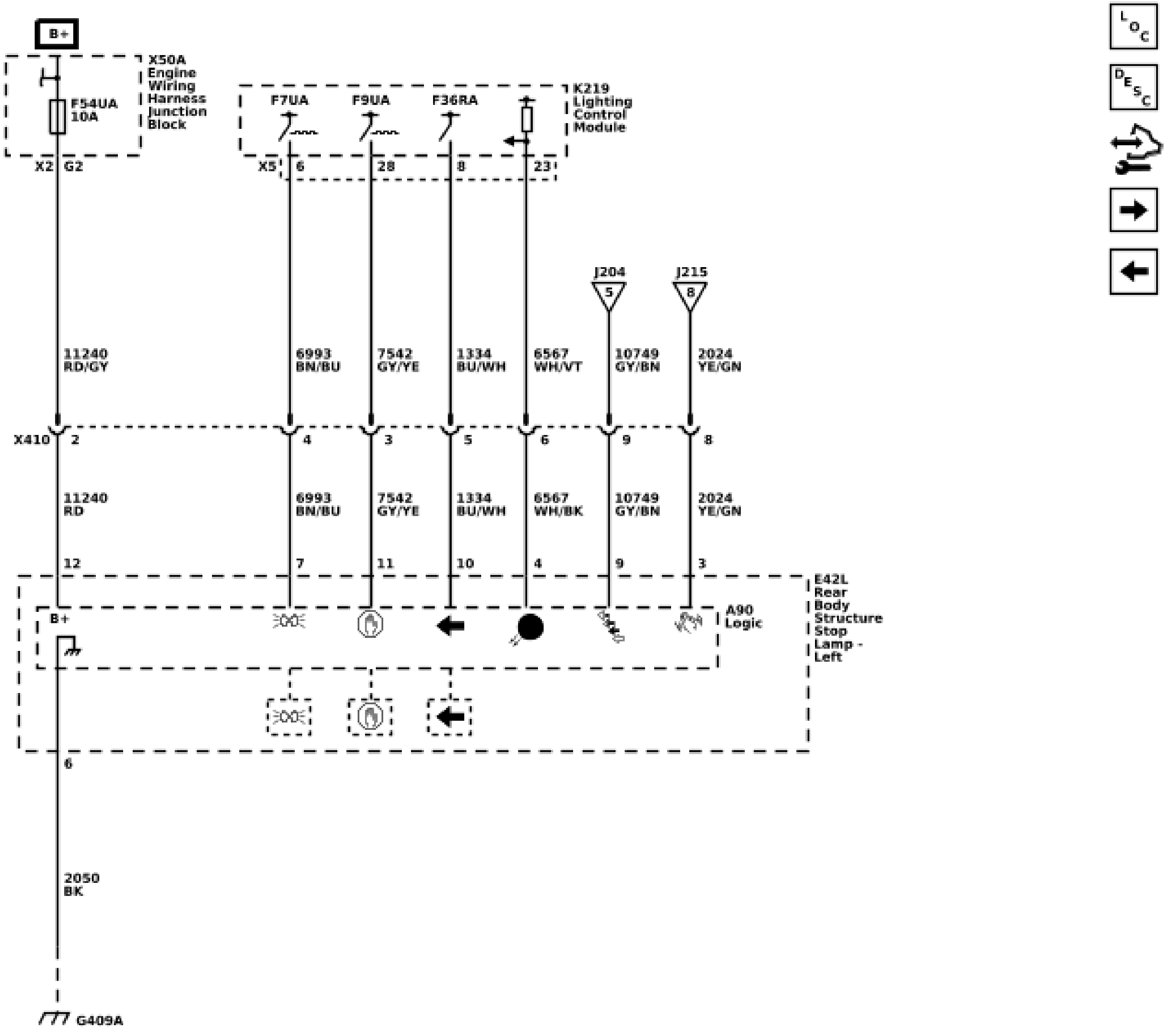
6885441

6885442

# Exterior Lights Schematics (Rear Left - Stop, Tail, and Turn Lights (TAB))

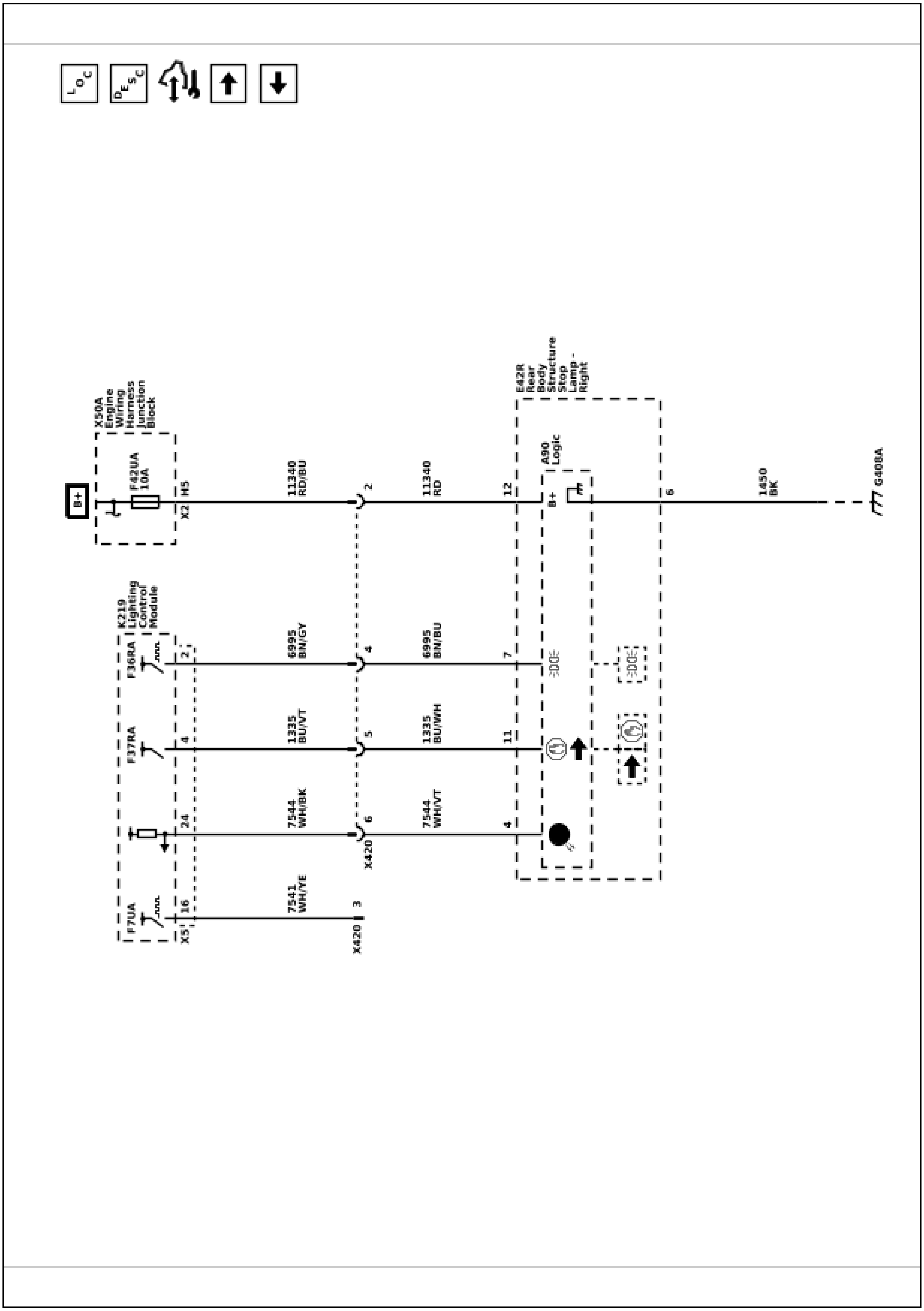

B+
X50A Engine Wiring Harness Junction Block
F54UA 10A
X2
G2
11240 RD/GY
X410
2
11240 RD
12
K219 Lighting Control Module
F7UA
X5
6
6993 BN/BU
4
6993 BN/BU
7
F36RA
8
1334 BU/WH
5
1334 BU/WH
11
23
6567 WH/VT
6
6567 WH/VT
4
F9UA
28
7542 GY/YE
3
X410
E42L Rear Body Structure Stop Lamp - Left
A90 Logic
B+
6
2050 BK
G409A

## Exterior Lights Schematics (Rear Left - Stop, Tail, and Turn Lights (TAU))

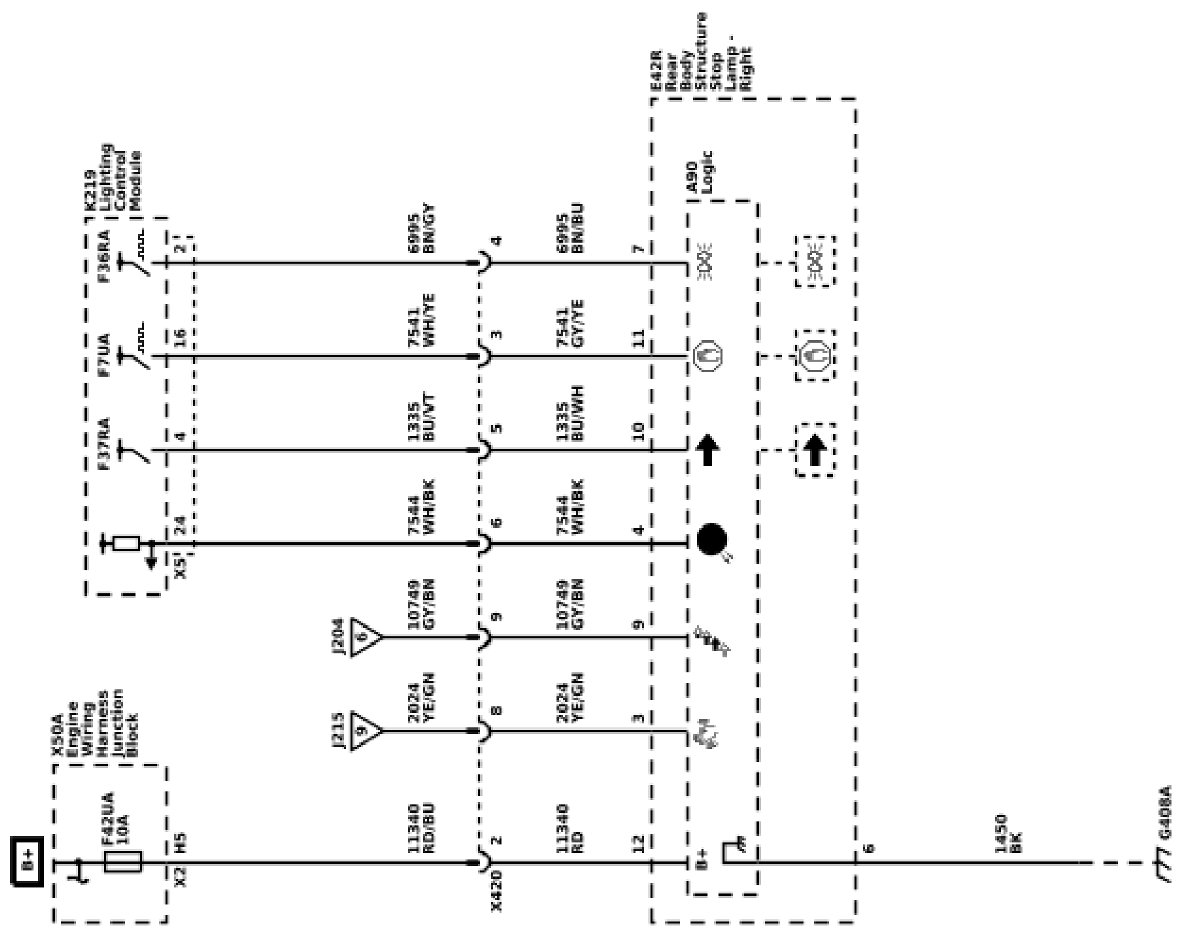

B+
X50A Engine Wiring Harness Junction Block
F54UA 10A
X2 G2
F7UA
F9UA
F36RA
K219 Lighting Control Module
X5 6
28
8
23
J204 5
J215 8
11240 RD/GY
6993 BN/BU
7542 GY/YE
1334 BU/WH
6567 WH/VT
10749 GY/BN
2024 YE/GN
X410 2
4
3
5
6
9
8
11240 RD
6993 BN/BU
7542 GY/YE
1334 BU/WH
6567 WH/BK
10749 GY/BN
2024 YE/GN
12
7
11
10
4
9
3
B+
A90 Logic
E42L Rear Body Structure Stop Lamp - Left
6
2050 BK
G409A

6885443

## Exterior Lights Schematics (Rear Right - Stop, Tail, and Turn Lights (TAB))

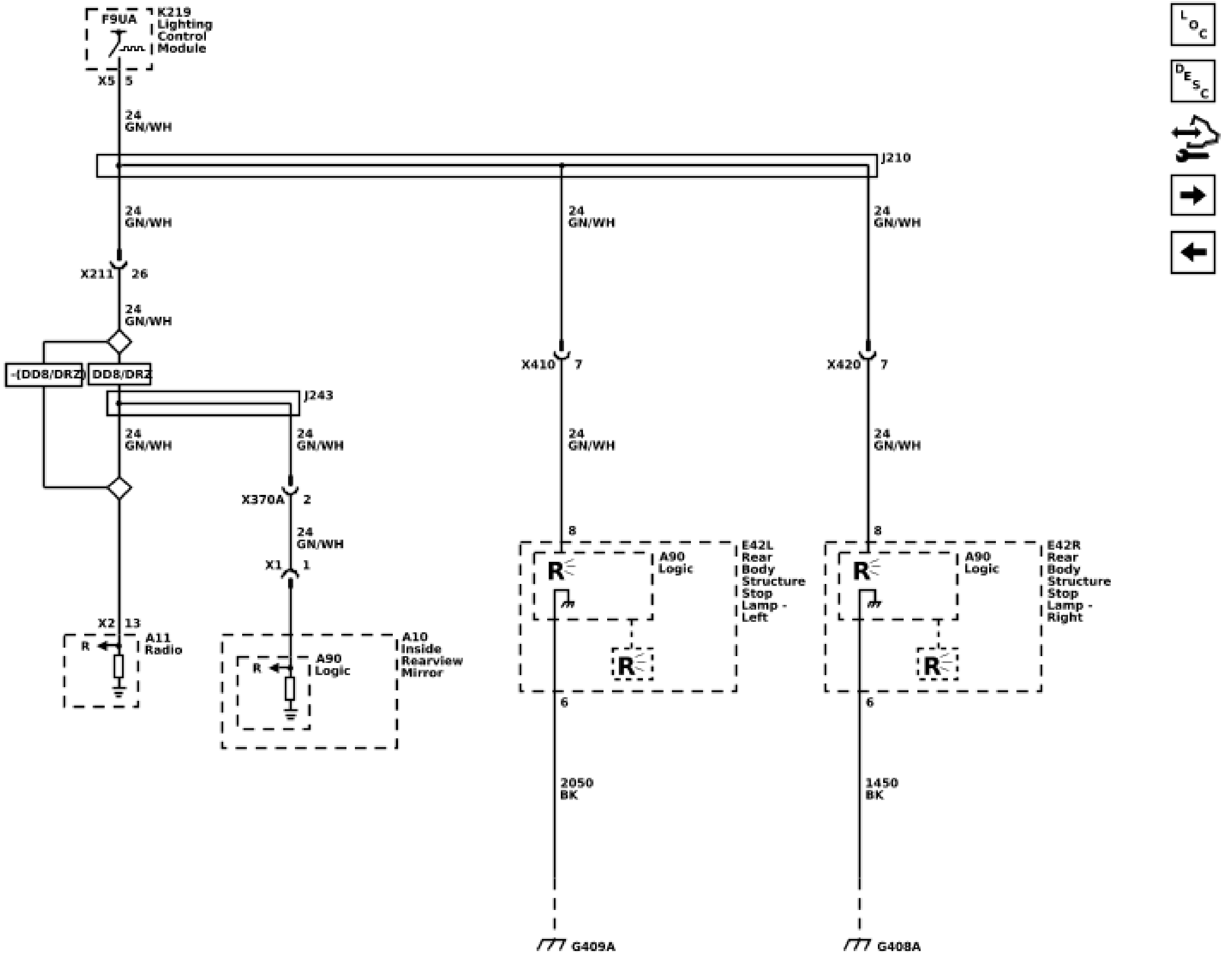

6885444
B+
X50A Engine Wiring Harness Junction Block
F42UA 10A
X2 H5
11340 RD/BU
2
11340 RD
12
E42R Rear Body Structure Stop Lamp - Right
A90 Logic
B+
6
1450 BK
G408A
K219 Lighting Control Module
F36RA
2
6995 BN/GY
4
6995 BN/BU
7
F37RA
4
1335 BU/VT
5
1335 BU/WH
11
24
7544 WH/BK
6
7544 WH/VT
4
X420
F7UA
X5 16
7541 WH/YE
3
X420

## Exterior Lights Schematics (Rear Right - Stop, Tail, and Turn Lights (TAU))



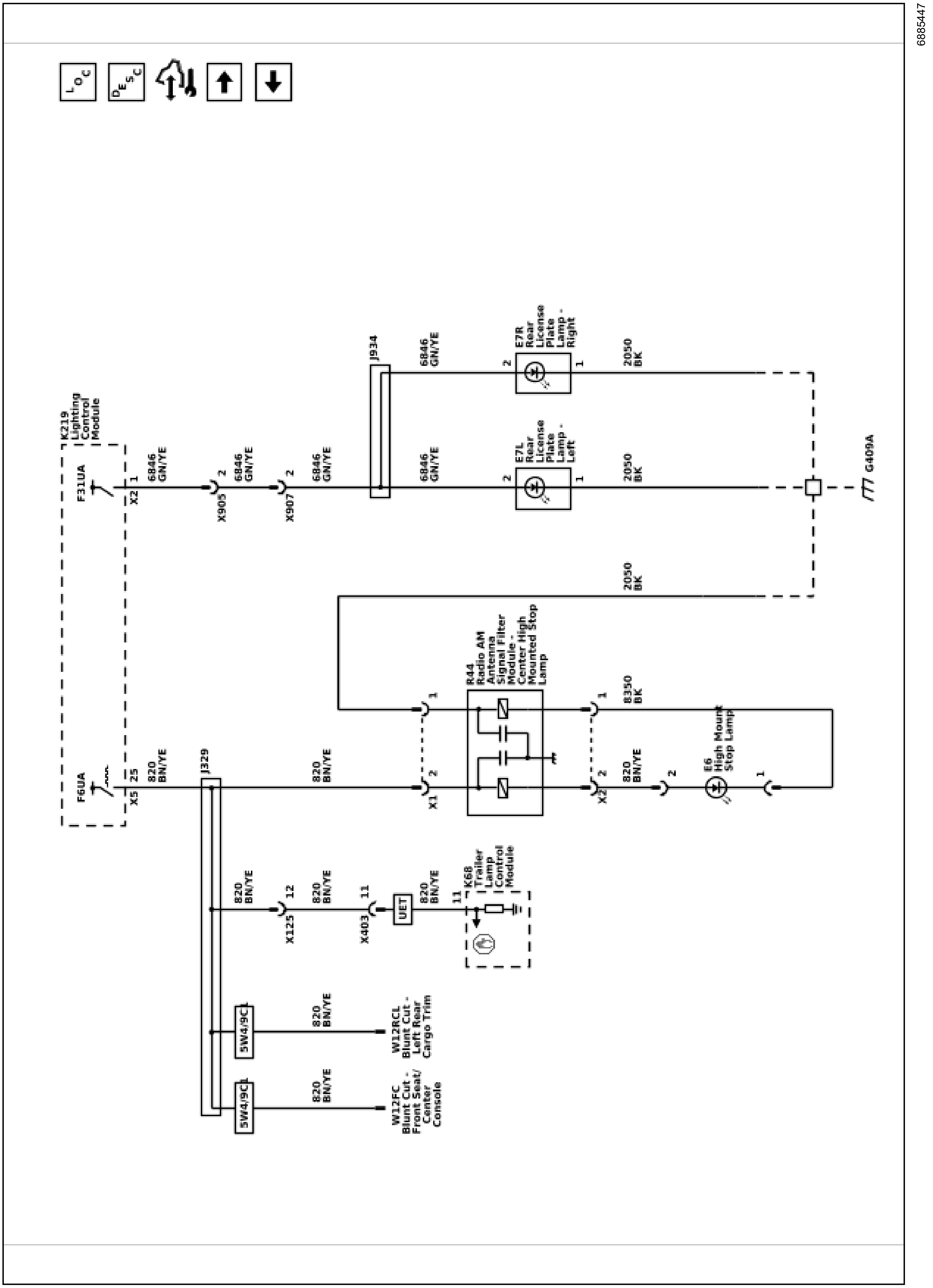
6885445
B+
X50A Engine Wiring Harness Junction Block
F42UA 10A
X2 H5
11340 RD/BU
X420 2
11340 RD
12
B+
J215 9
2024 YE/GN
8
2024 YE/GN
3
J204 6
10749 GY/BN
9
10749 GY/BN
9
K219 Lighting Control Module
X5 24
7544 WH/BK
6
7544 WH/BK
4
F37RA
4
1335 BU/VT
5
1335 BU/WH
10
F7UA
16
7541 WH/YE
3
7541 GY/YE
11
F36RA
2
6995 BN/GY
4
6995 BN/BU
7
E42R Rear Body Structure Stop Lamp - Right
A90 Logic
6
1450 BK
G408A

## Exterior Lights Schematics (Back Up Lamps)

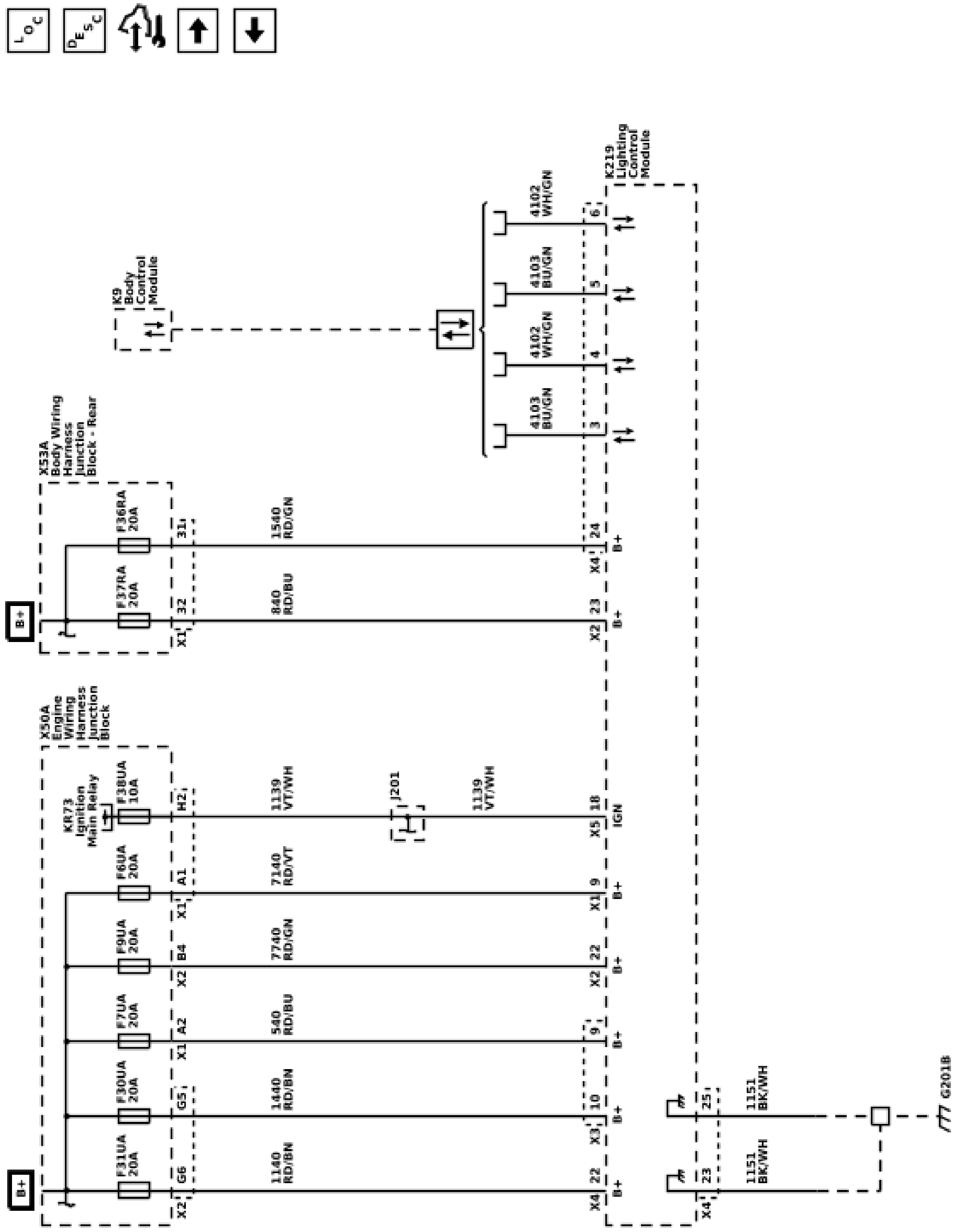

F9UA
K219 Lighting Control Module
X5 5
24 GN/WH
J210
X211 26
DD8/DRZ
-(DD8/DRZ)
J243
X370A 2
X1 1
X2 13
A11 Radio
R
A10 Inside Rearview Mirror
A90 Logic
X410 7
X420 7
8
E42L Rear Body Structure Stop Lamp - Left
E42R Rear Body Structure Stop Lamp - Right
6
2050 BK
1450 BK
G409A
G408A

6885446

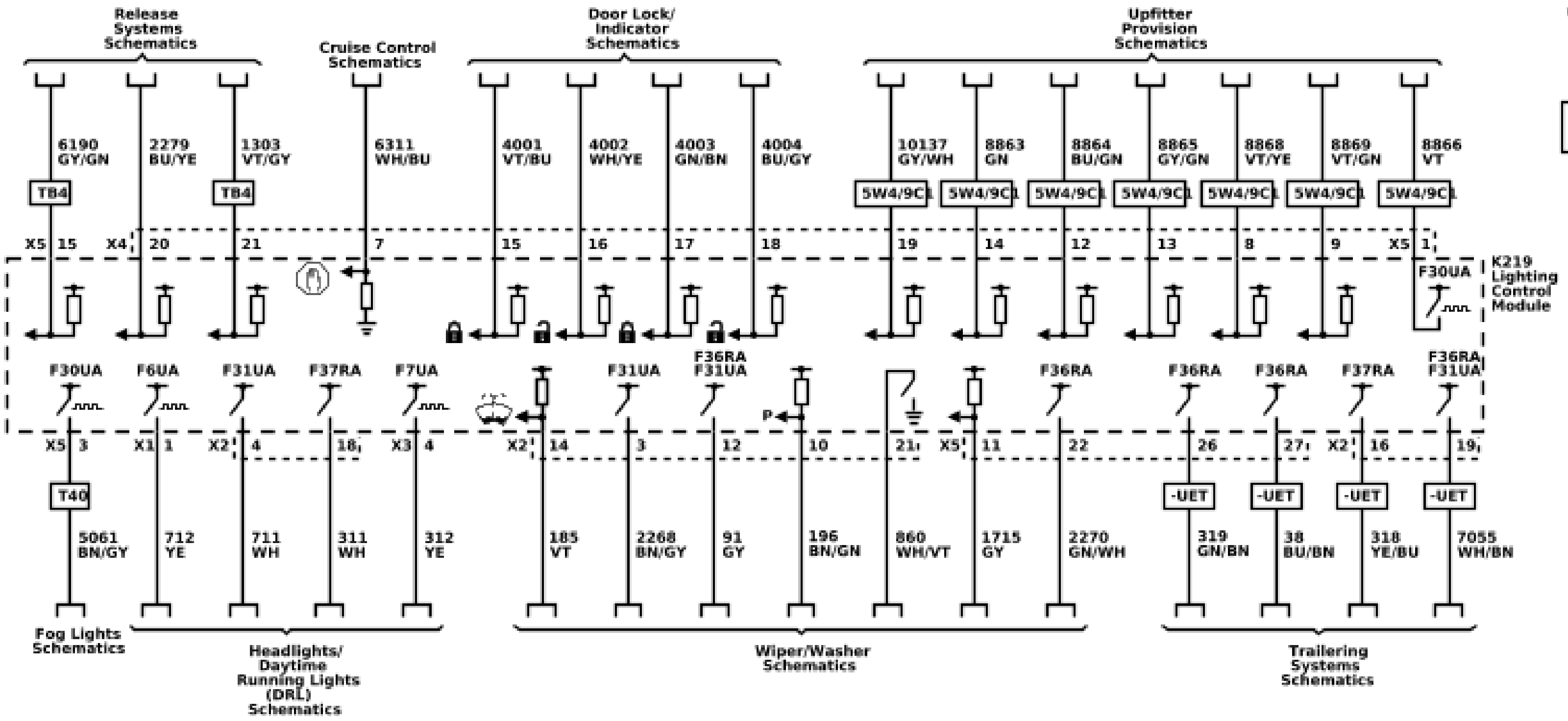
## Exterior Lights Schematics (License and High Mount Stop Lights)


6885447
L O C
D E S C
K219 Lighting Control Module
F31UA
X2 1
6846 GN/YE
X905 2
6846 GN/YE
X907 2
6846 GN/YE
J934
6846 GN/YE
6846 GN/YE
E7R Rear License Plate Lamp - Right
E7L Rear License Plate Lamp - Left
2
1
2050 BK
2050 BK
2050 BK
G409A
F6UA
X5 25
820 BN/YE
J329
820 BN/YE
X1 1
X1 2
R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp
X2 1
X2 2
8350 BK
820 BN/YE
E6 High Mount Stop Lamp
2
1
820 BN/YE
X125 12
820 BN/YE
X403 11
UET
820 BN/YE
11
K68 Trailer Lamp Control Module
5W4/9C
820 BN/YE
W12RCL Blunt Cut - Left Rear Cargo Trim
5W4/9C
820 BN/YE
W12FC Blunt Cut - Front Seat/ Center Console

# Exterior Lights Schematics (Lighting Control Module Power, Ground, and Serial Data)

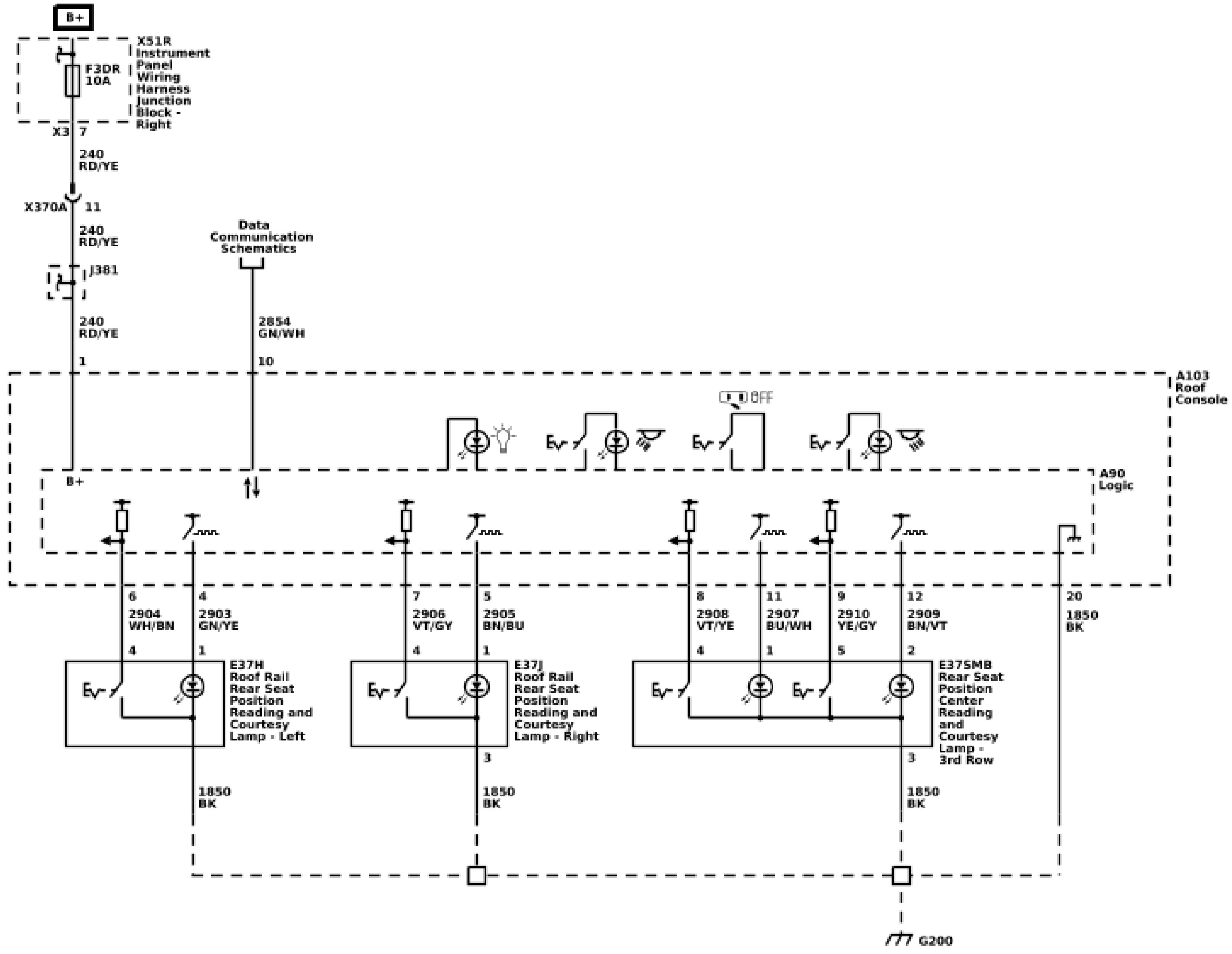

6885448
LOC
DESC
B+
X50A Engine Wiring Harness Junction Block
F31UA 20A
F30UA 20A
F7UA 20A
F9UA 20A
F6UA 20A
KR73 Ignition Main Relay
F38UA 10A
X2 G6
G5
X1 A2
X2 B4
X1 A1
H2
1140 RD/BN
1440 RD/BN
540 RD/BU
7740 RD/GN
7140 RD/VT
1139 VT/WH
J201
1139 VT/WH
X53A Body Wiring Harness Junction Block - Rear
F37RA 20A
F36RA 20A
X1 32
31
840 RD/BU
1540 RD/GN
K9 Body Control Module
4103 BU/GN
4102 WH/GN
4103 BU/GN
4102 WH/GN
K219 Lighting Control Module
X4 22 B+
X3 10 B+
9 B+
X2 22 B+
X1 9 B+
X5 18 IGN
X2 23 B+
X4 24 B+
3
4
5
6
X4 23
25
1151 BK/WH
1151 BK/WH
G201B

## Exterior Lights Schematics (Lighting Control Module Subsystem References)


Release Systems Schematics
Cruise Control Schematics
Door Lock/ Indicator Schematics
Upfitter Provision Schematics
6190 GY/GN
2279 BU/YE
1303 VT/GY
6311 WH/BU
4001 VT/BU
4002 WH/YE
4003 GN/BN
4004 BU/GY
10137 GY/WH
8863 GN
8864 BU/GN
8865 GY/GN
8868 VT/YE
8869 VT/GN
8866 VT
TB4
TB4
5W4/9C1
X5 15
X4 20
21
7
15
16
17
18
19
14
12
13
8
9
X5 1
F30UA
K219 Lighting Control Module
F30UA
F6UA
F31UA
F37RA
F7UA
F31UA
F36RA F31UA
P
F36RA
F36RA
F36RA
F37RA
F36RA F31UA
X5 3
X1 1
X2 4
18
X3 4
X2 14
3
12
10
21
X5 11
22
26
27
X2 16
19
T40
-UET
5061 BN/GY
712 YE
711 WH
311 WH
312 YE
185 VT
2268 BN/GY
91 GY
196 BN/GN
860 WH/VT
1715 GY
2270 GN/WH
319 GN/BN
38 BU/BN
318 YE/BU
7055 WH/BN
Fog Lights Schematics
Headlights/ Daytime Running Lights (DRL) Schematics
Wiper/Washer Schematics
Trailering Systems Schematics

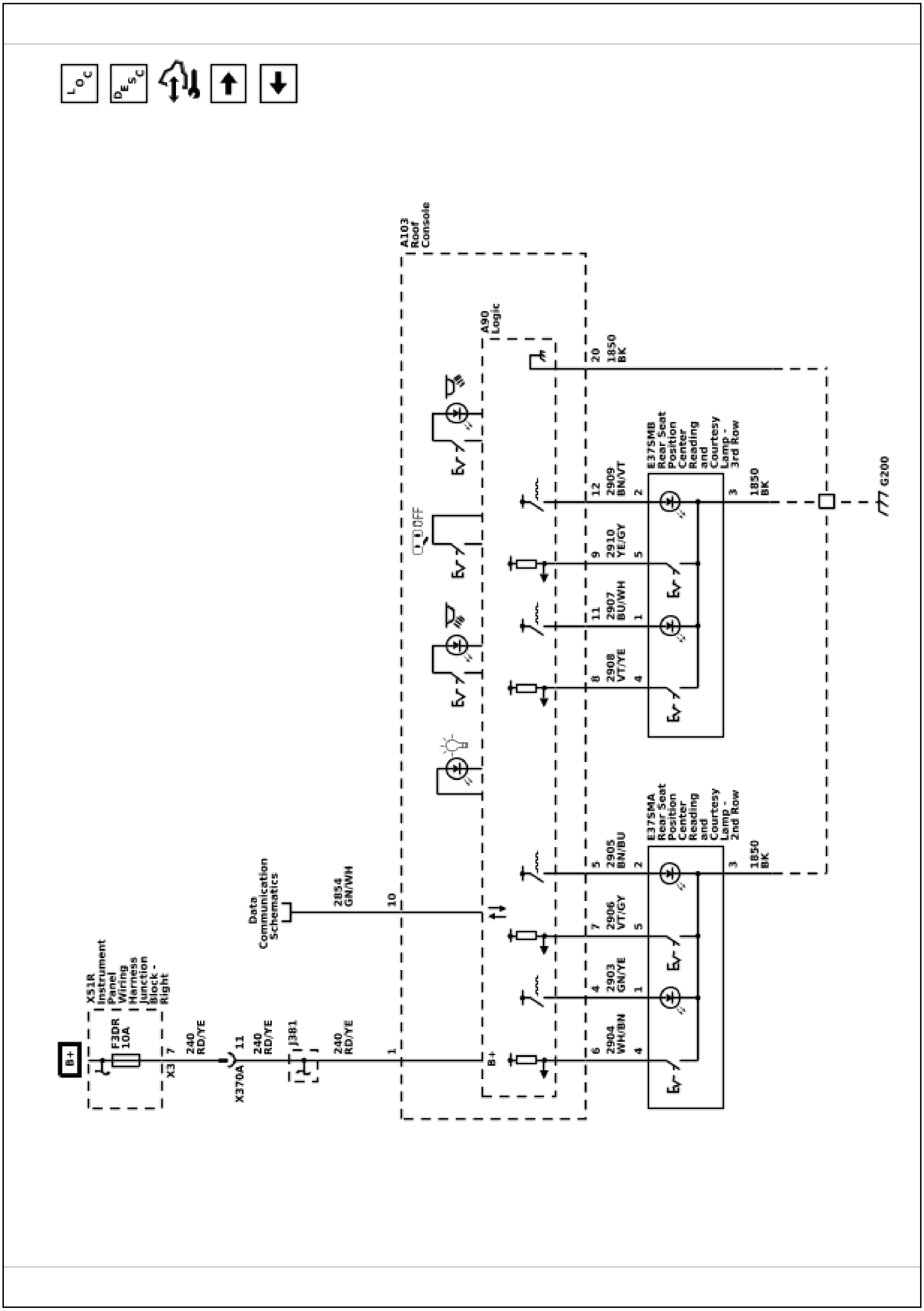
6885449

## Interior Lights Schematics (Roof Console, and Roof Reading/Courtesy Lamps (C3U))

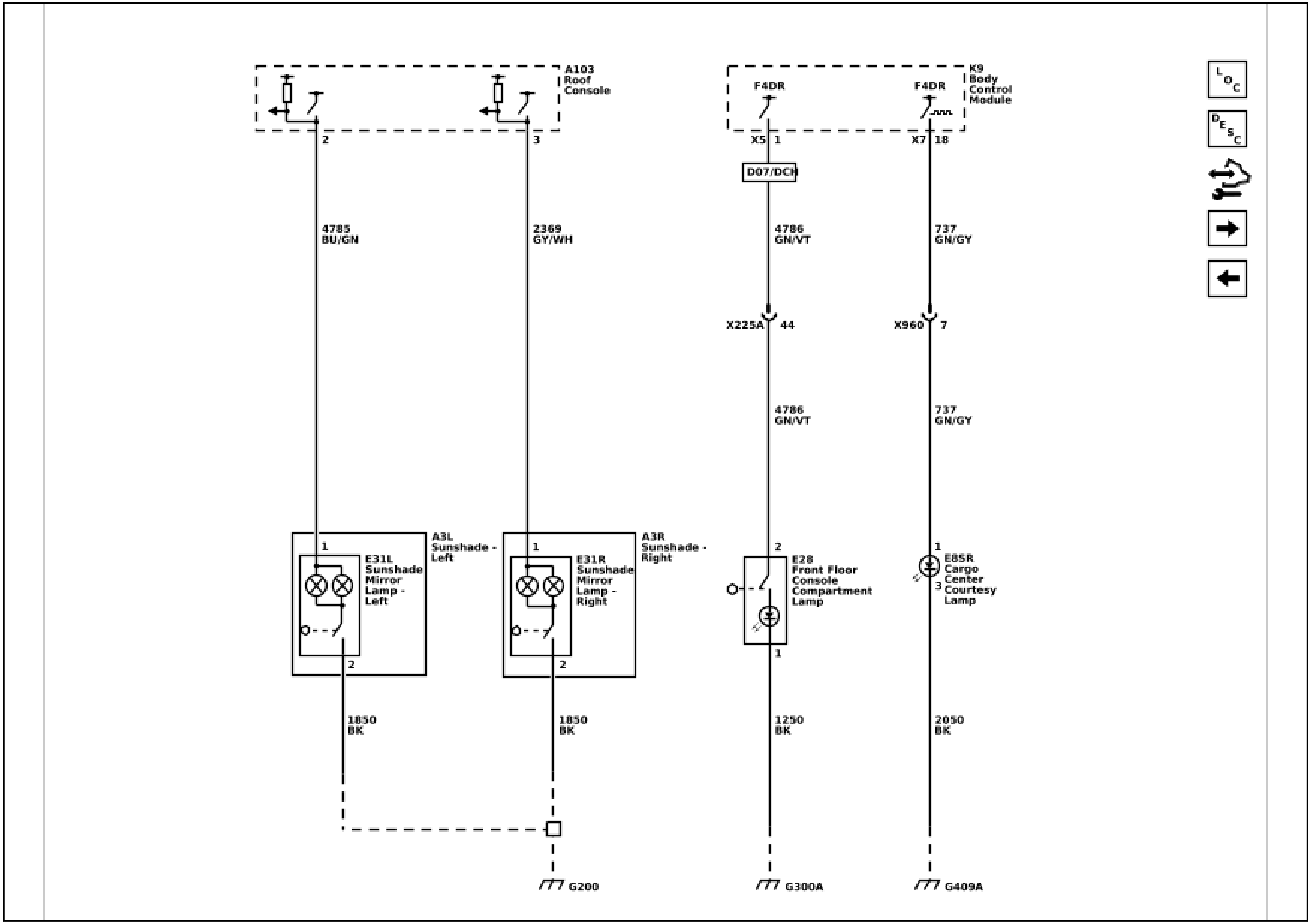

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
240 RD/YE
1
Data Communication Schematics
2854 GN/WH
10
A103 Roof Console
A90 Logic
B+
OFF
6
2904 WH/BN
4
4
2903 GN/YE
1
E37H Roof Rail Rear Seat Position Reading and Courtesy Lamp - Left
1850 BK
7
2906 VT/GY
4
5
2905 BN/BU
1
E37J Roof Rail Rear Seat Position Reading and Courtesy Lamp - Right
3
1850 BK
8
2908 VT/YE
4
11
2907 BU/WH
1
9
2910 YE/GY
5
12
2909 BN/VT
2
E37SMB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row
3
1850 BK
20
1850 BK
G200

6885450

# Interior Lights Schematics (Roof Console, and Roof Reading/Courtesy Lamps (- C3U))

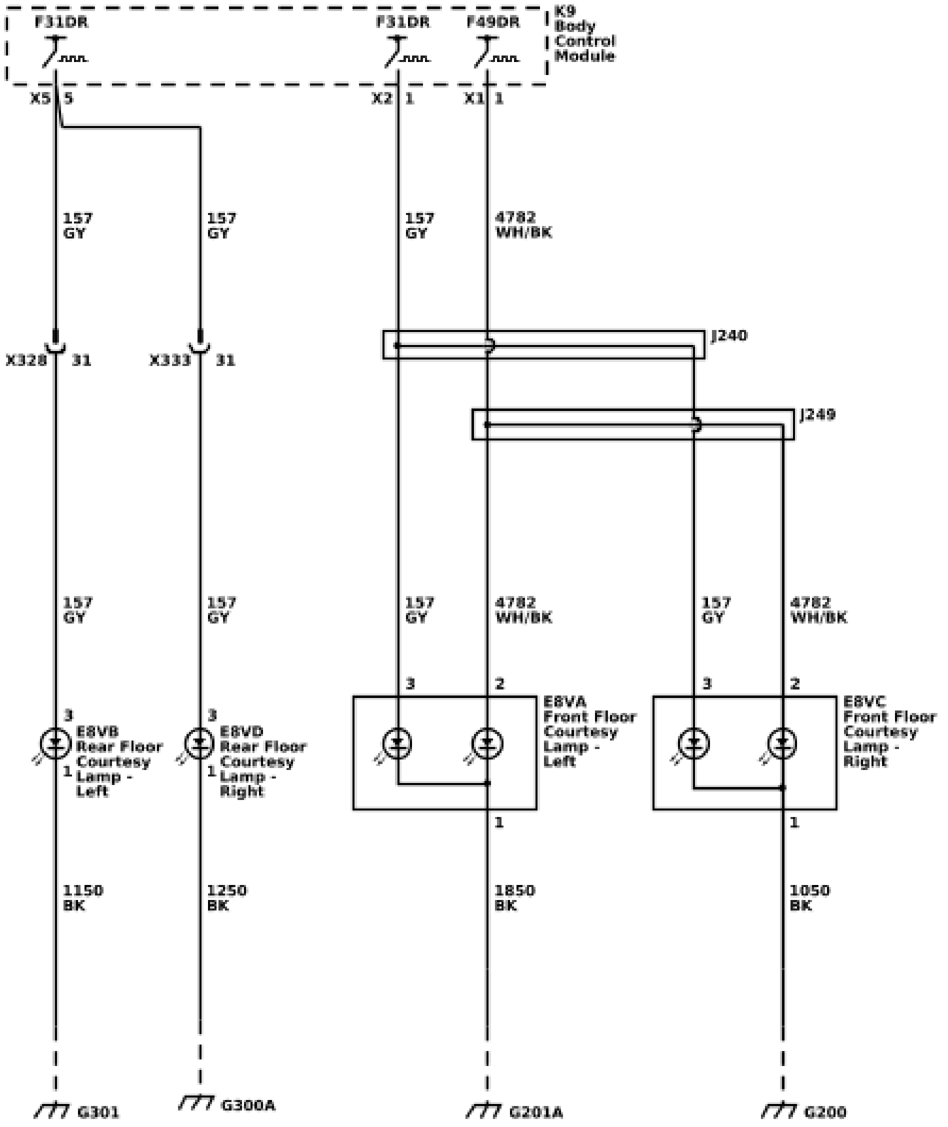

6885451
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A
11
240 RD/YE
J381
240 RD/YE
1
B+
Data Communication Schematics
2854 GN/WH
10
A103 Roof Console
A90 Logic
OFF
6
2904 WH/BN
4
4
2903 GN/YE
1
7
2906 VT/GY
5
5
2905 BN/BU
2
E375MA Rear Seat Position Center Reading and Courtesy Lamp - 2nd Row
3
1850 BK
8
2908 VT/YE
4
11
2907 BU/WH
1
9
2910 YE/GY
5
12
2909 BN/VT
2
E375MB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row
3
1850 BK
20
1850 BK
G200

## Interior Lights Schematics (Sunshades, Floor Console Compartment, and Cargo Lamps)


A103
Roof
Console
2
3
4785
BU/GN
2369
GY/WH
A3L
Sunshade -
Left
E31L
Sunshade
Mirror
Lamp -
Left
1
2
A3R
Sunshade -
Right
E31R
Sunshade
Mirror
Lamp -
Right
1
2
1850
BK
1850
BK
G200
K9
Body
Control
Module
F4DR
F4DR
X5 1
X7 18
D07/DCH
4786
GN/VT
737
GN/GY
X225A 44
X960 7
4786
GN/VT
737
GN/GY
2
E28
Front Floor
Console
Compartment
Lamp
1
1
E85R
Cargo
Center
Courtesy
Lamp
3
1250
BK
2050
BK
G300A
G409A

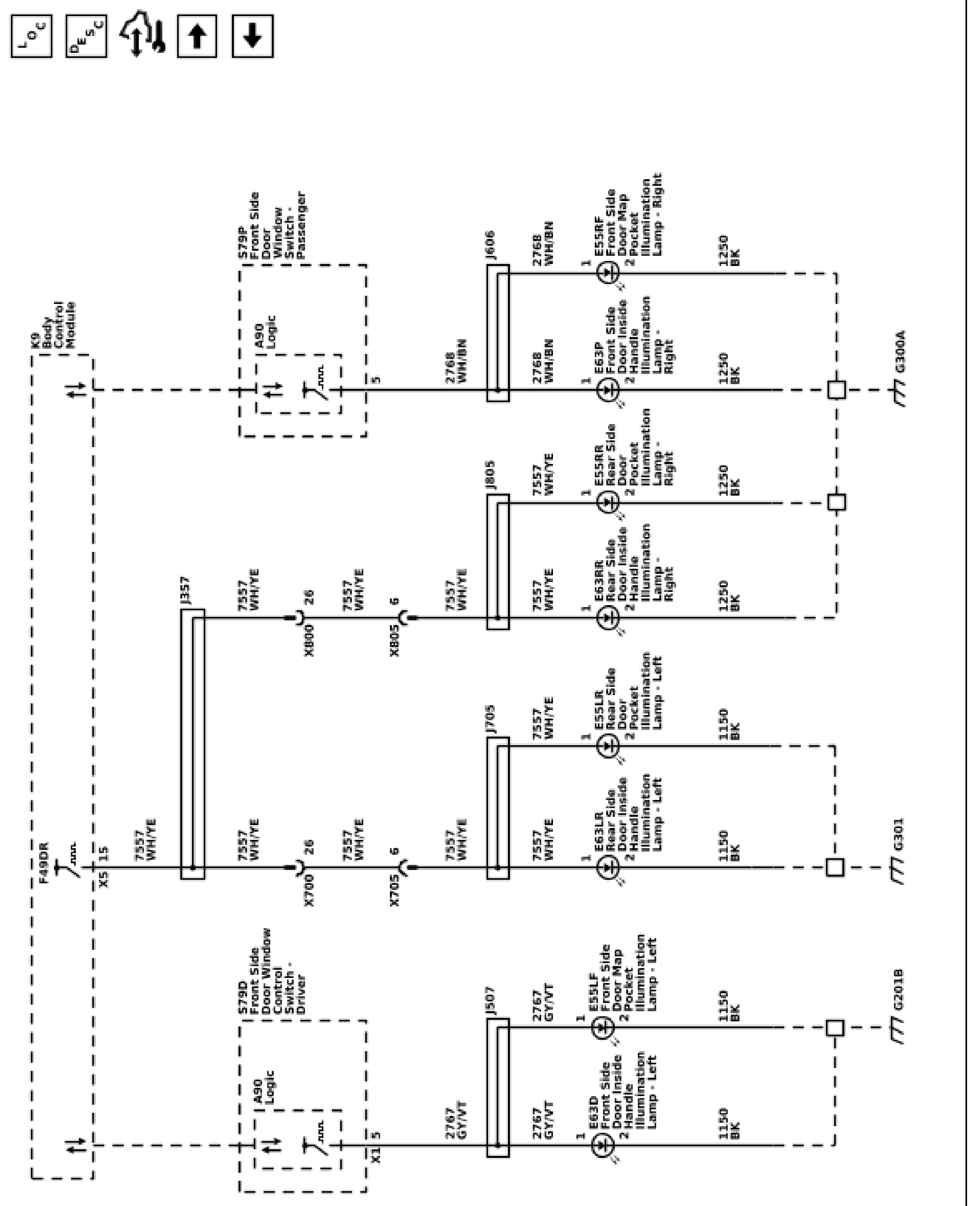
6885452

## Interior Lights Schematics (Floor Courtesy Lamps)

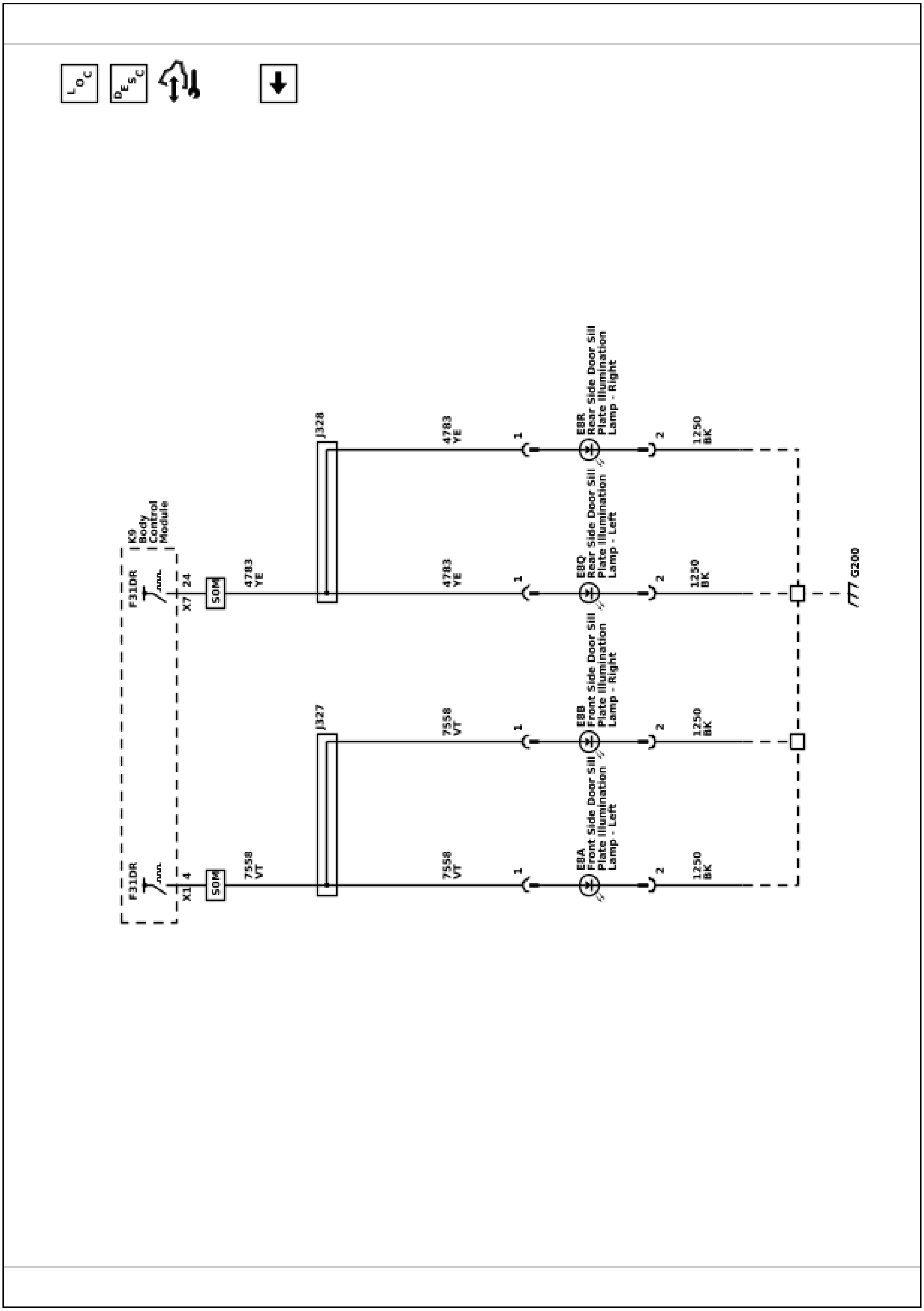

K9 Body Control Module
F31DR
F31DR
F49DR
X5 5
X2 1
X1 1
157 GY
157 GY
157 GY
4782 WH/BK
X328 31
X333 31
J240
J249
157 GY
157 GY
157 GY
4782 WH/BK
157 GY
4782 WH/BK
3
2
3
2
3
1
3
1
E8VB Rear Floor Courtesy Lamp - Left
E8VD Rear Floor Courtesy Lamp - Right
E8VA Front Floor Courtesy Lamp - Left
E8VC Front Floor Courtesy Lamp - Right
1
1
1150 BK
1250 BK
1850 BK
1050 BK
G301
G300A
G201A
G200

6885453

## Interior Lights Schematics (Door Illumination Lamps)

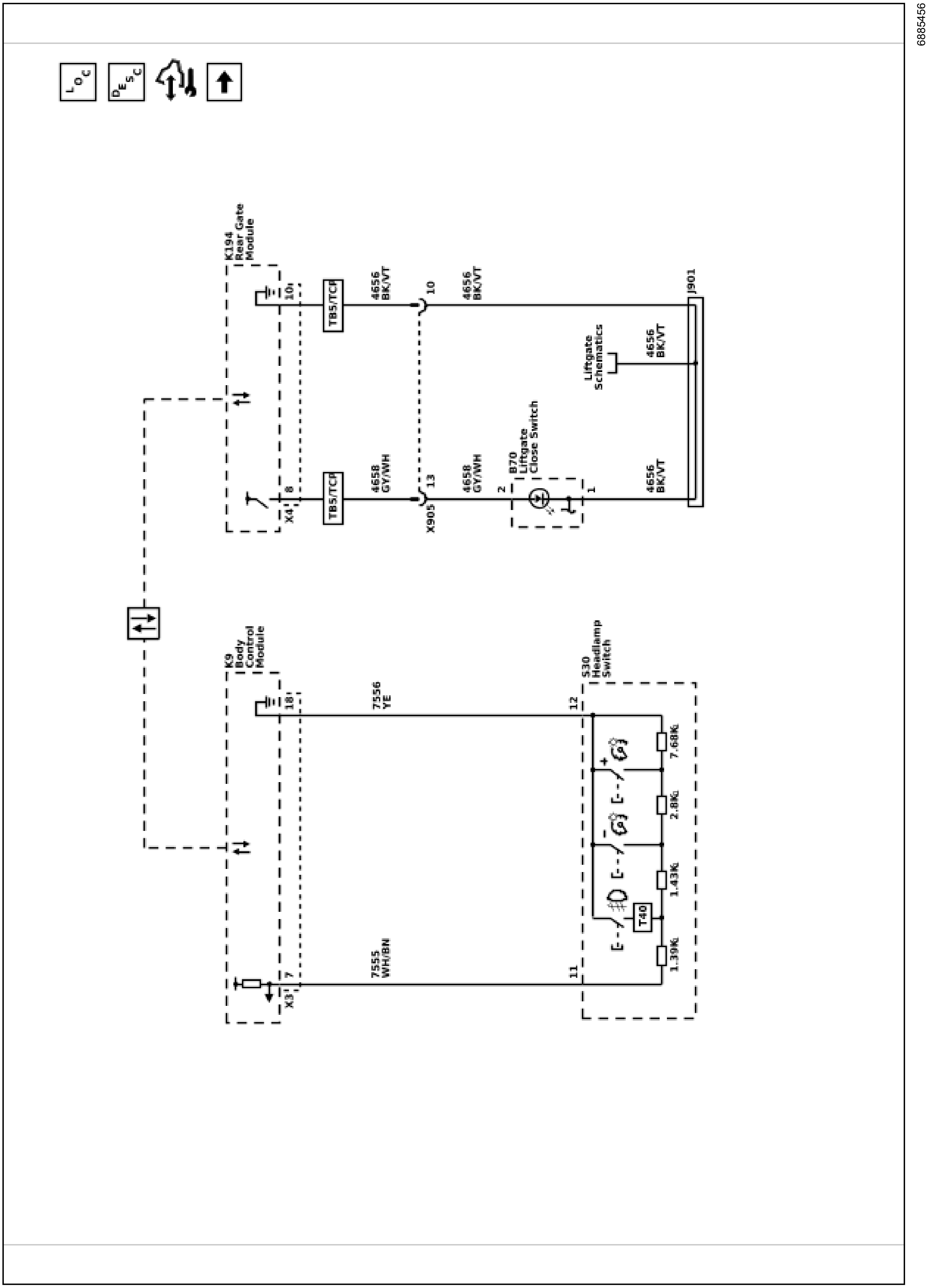

6885454
LOC
DESC
K9 Body Control Module
F49DR
X5 15
7557 WH/YE
J357
7557 WH/YE
X800 26
X805 6
X700 26
X705 6
S79P Front Side Door Window Switch - Passenger
S79D Front Side Door Window Control Switch - Driver
A90 Logic
5
X1 5
2768 WH/BN
2767 GY/VT
J606
J805
J705
J507
1
2
E55RF Front Side Door Map Pocket Illumination Lamp - Right
E63P Front Side Door Inside Handle Illumination Lamp - Right
E55RR Rear Side Door Pocket Illumination Lamp - Right
E63RR Rear Side Door Inside Handle Illumination Lamp - Right
E55LR Rear Side Door Pocket Illumination Lamp - Left
E63LR Rear Side Door Inside Handle Illumination Lamp - Left
E55LF Front Side Door Map Pocket Illumination Lamp - Left
E63D Front Side Door Inside Handle Illumination Lamp - Left
1250 BK
1150 BK
G300A
G301
G201B

## Interior Lights Schematics (Accessory - Door Sill Plate Lamps)

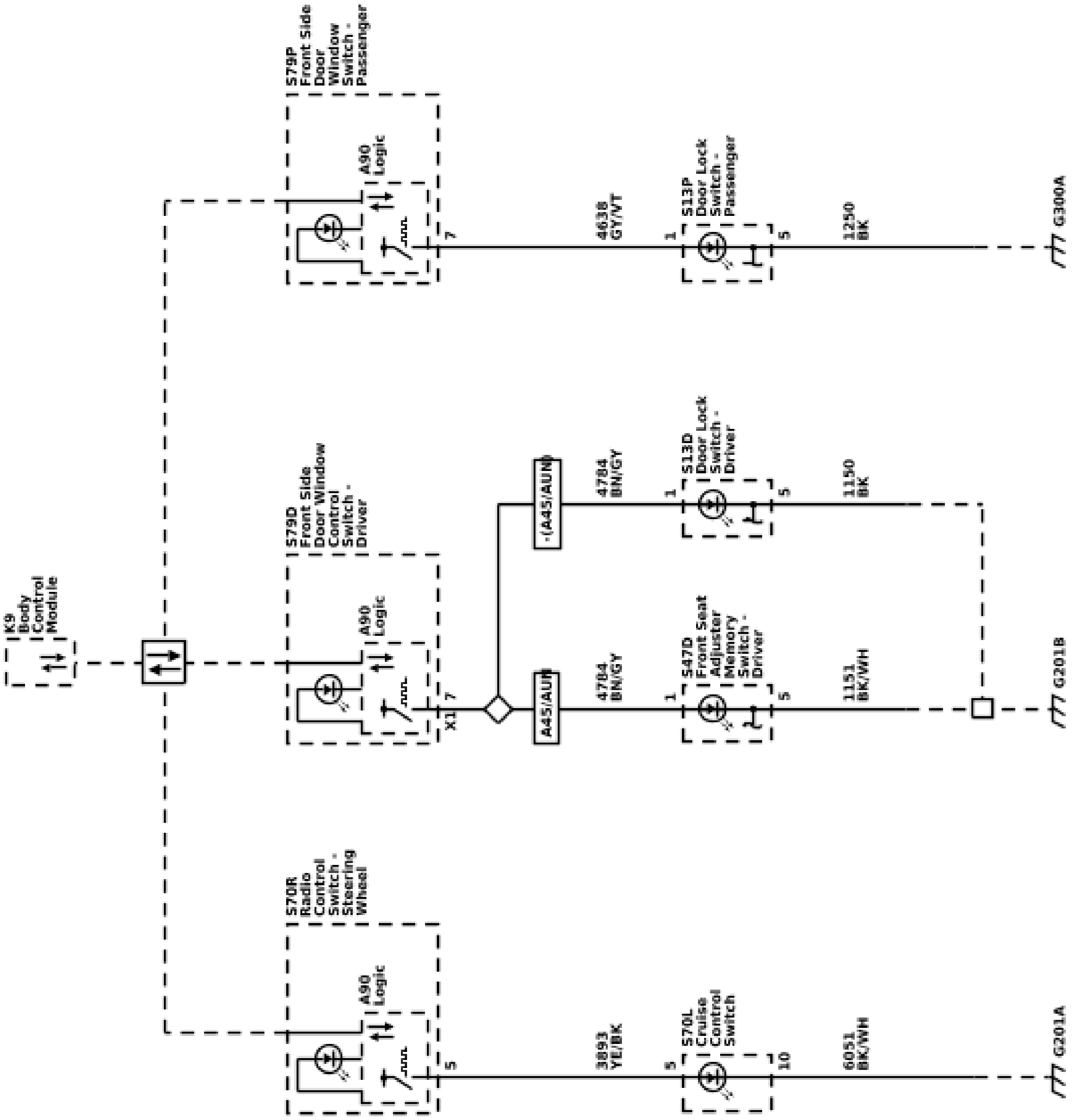

LOC
DESC
K9 Body Control Module
F31DR
X7 24
X1 4
SOM
4783 YE
7558 VT
J328
J327
1
2
E8R Rear Side Door Sill Plate Illumination Lamp - Right
E8Q Rear Side Door Sill Plate Illumination Lamp - Left
E8B Front Side Door Sill Plate Illumination Lamp - Right
E8A Front Side Door Sill Plate Illumination Lamp - Left
1250 BK
G200

6885455

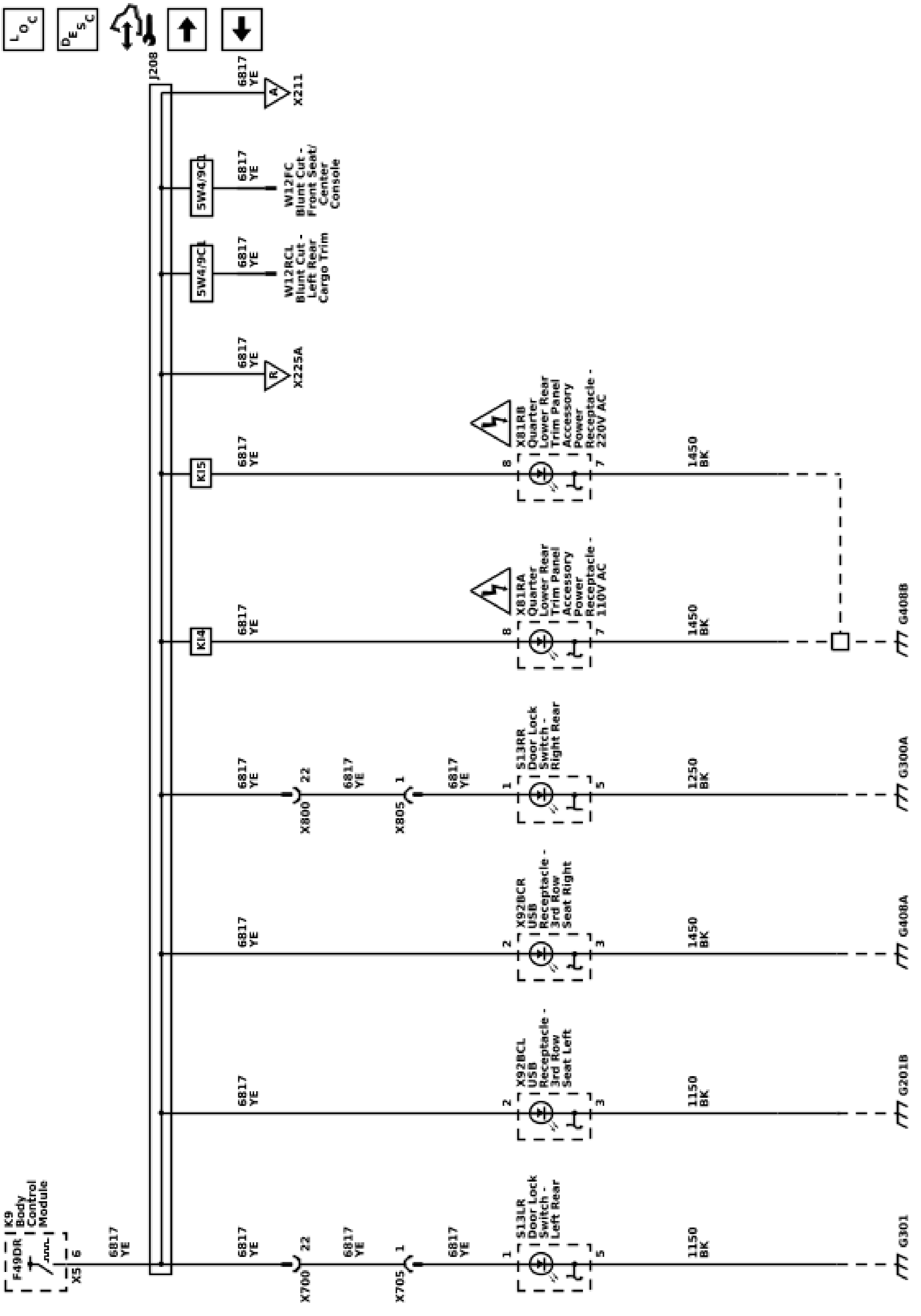
## Interior Lights Dimming Schematics (Controls and Liftgate Dimming)


6885456
LOC
DESC
K194 Rear Gate Module
10
X4
8
TBS/TCP
4656 BK/VT
4658 GY/WH
X905
13
B70 Liftgate Close Switch
2
1
Liftgate Schematics
J901
K9 Body Control Module
18
X3
7
7556 YE
7555 WH/BN
S30 Headlamp Switch
12
11
+
−
T40
7.68K
2.8K
1.43K
1.39K

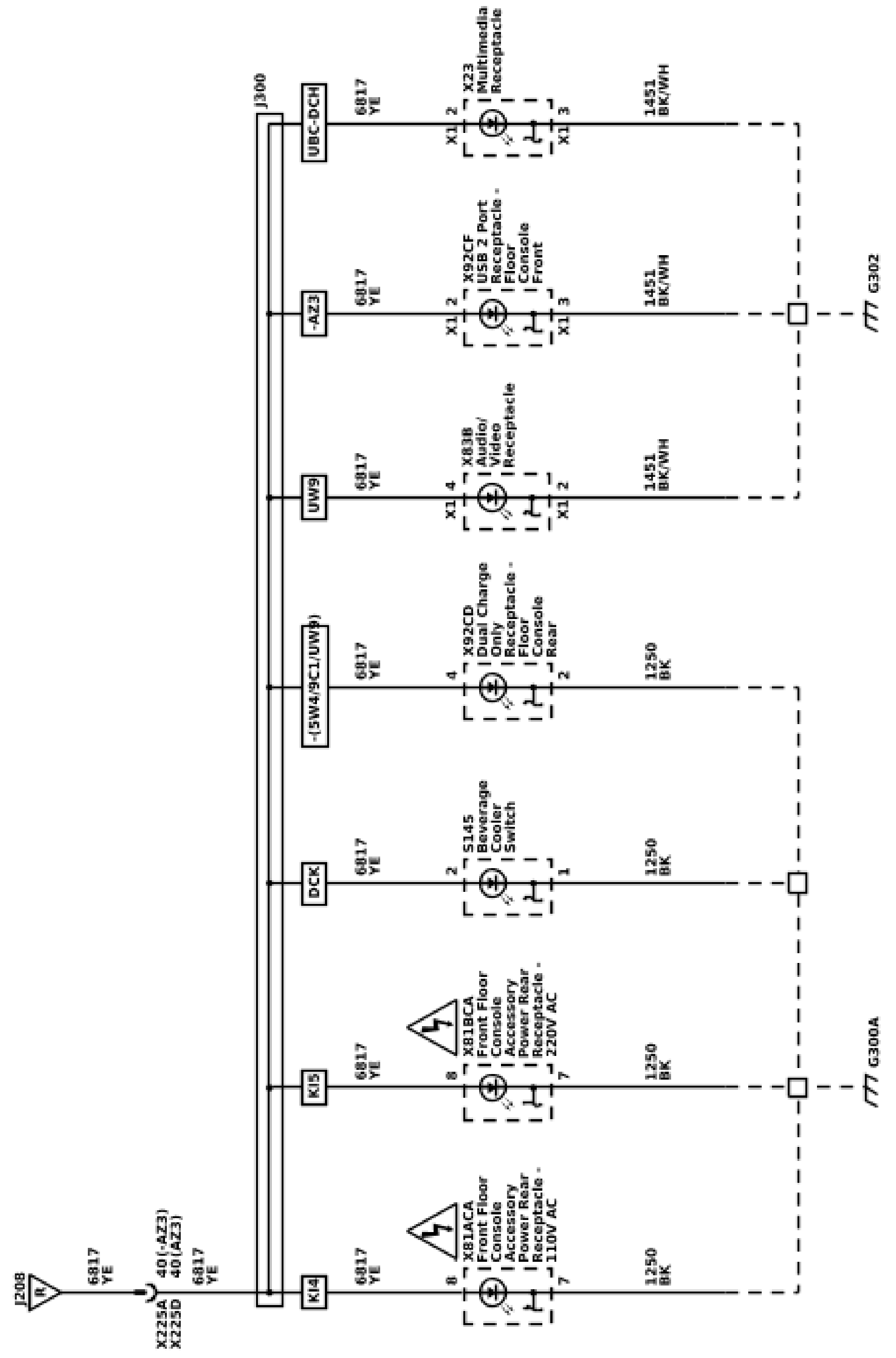
## Interior Lights Dimming Schematics (Steering Wheel and Front Door Dimming)


K9 Body Control Module
S79P Front Side Door Window Switch - Passenger
A90 Logic
7
4638 GY/VT
1
S13P Door Lock Switch - Passenger
5
1250 BK
G300A
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X1 7
A45/AUN
-(A45/AUN)
4784 BN/GY
1
S47D Front Seat Adjuster Memory Switch - Driver
5
1151 BK/WH
G201B
4784 BN/GY
1
S13D Door Lock Switch - Driver
5
1150 BK
S70R Radio Control Switch - Steering Wheel
A90 Logic
5
3893 YE/BK
5
S70L Cruise Control Switch
10
6051 BK/WH
G201A
6885457

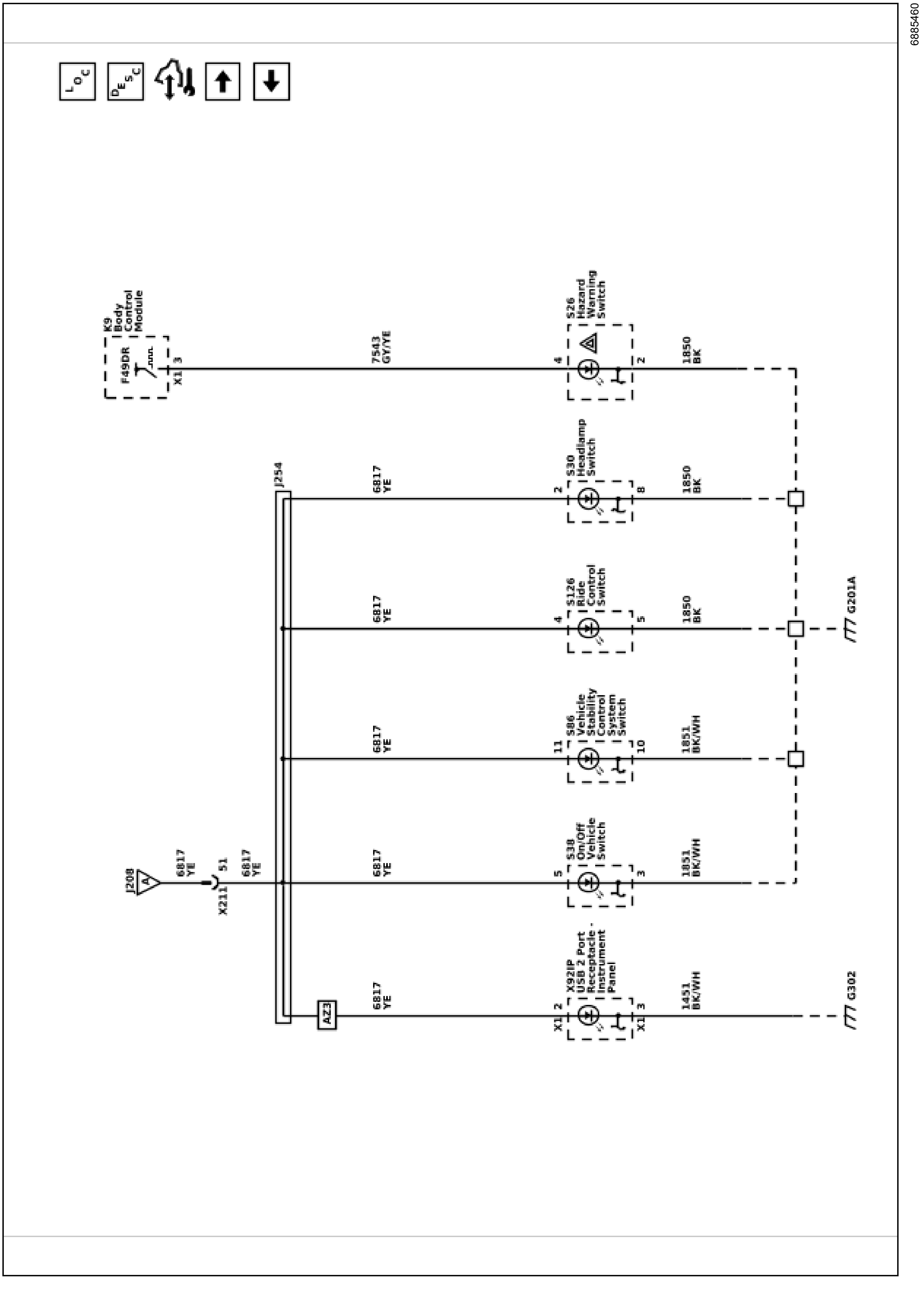
## Interior Lights Dimming Schematics (Rear Doors, Seats, and Trim Dimming)


6885458
J208
6817 YE
A
X211
5W4/9C
6817 YE
W12FC Blunt Cut - Front Seat/ Center Console
5W4/9C
6817 YE
W12RCL Blunt Cut - Left Rear Cargo Trim
6817 YE
R
X225A
KI5
6817 YE
8
X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC
7
1450 BK
KI4
6817 YE
8
X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC
7
1450 BK
G408B
6817 YE
22
X800
6817 YE
1
X805
6817 YE
1
S13RR Door Lock Switch - Right Rear
5
1250 BK
G300A
6817 YE
2
X92BCR USB Receptacle - 3rd Row Seat Right
3
1450 BK
G408A
6817 YE
2
X92BCL USB Receptacle - 3rd Row Seat Left
3
1150 BK
G201B
F49DR
K9 Body Control Module
X5 6
6817 YE
6817 YE
22
X700
6817 YE
1
X705
6817 YE
1
S13LR Door Lock Switch - Left Rear
5
1150 BK
G301

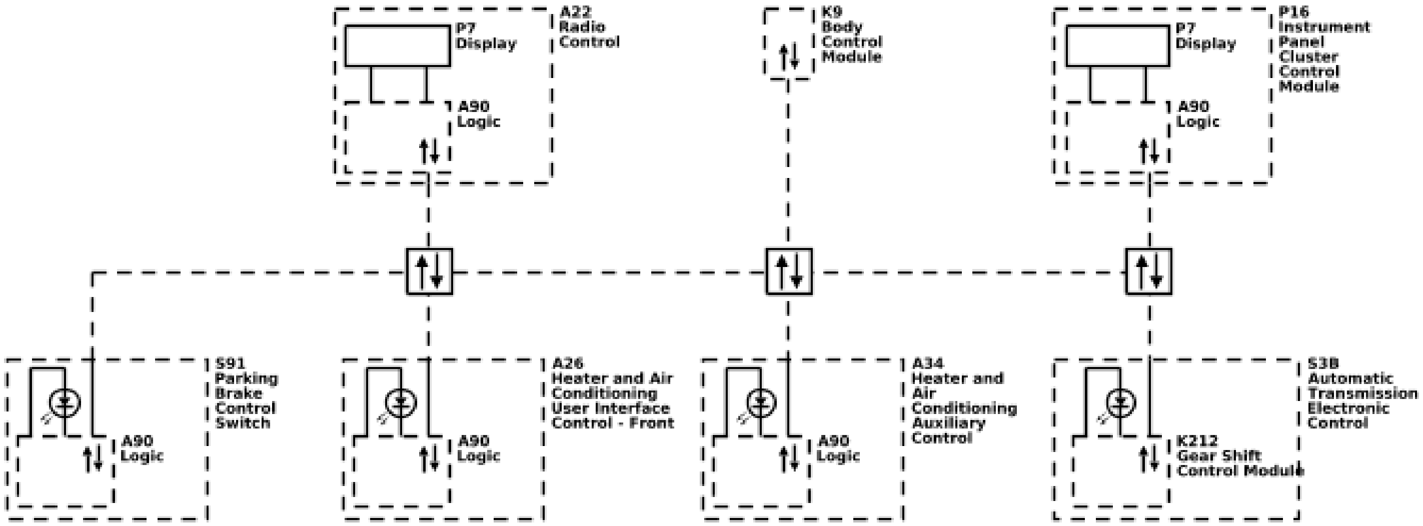
# Interior Lights Dimming Schematics (Floor Console Dimming)


6885459
J208
R
6817 YE
X225A X225D
40(-AZ3) 40(AZ3)
6817 YE
J300
KI4
KI5
DCK
-(5W4/9C1/UW9)
UW9
-AZ3
UBC-DCH
6817 YE
8
7
X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
2
1
S145 Beverage Cooler Switch
4
2
X92CD Dual Charge Only Receptacle - Floor Console Rear
X1 4
X1 2
X838 Audio/ Video Receptacle
X1 2
X1 3
X92CF USB 2 Port Receptacle - Floor Console Front
X1 2
X1 3
X23 Multimedia Receptacle
1250 BK
1451 BK/WH
G300A
G302

## Interior Lights Dimming Schematics (Instrument Panel Dimming)


6885460
K9 Body Control Module
F49DR
X1 3
7543 GY/YE
4
S26 Hazard Warning Switch
2
1850 BK
J254
6817 YE
2
S30 Headlamp Switch
8
1850 BK
6817 YE
4
S126 Ride Control Switch
5
1850 BK
G201A
6817 YE
11
S86 Vehicle Stability Control System Switch
10
1851 BK/WH
J208
A
6817 YE
X211
51
6817 YE
6817 YE
5
S38 On/Off Vehicle Switch
3
1851 BK/WH
AZ3
6817 YE
X1 2
X92IP USB 2 Port Receptacle - Instrument Panel
X1 3
1451 BK/WH
G302

## Interior Lights Dimming Schematics (Serial Data Dimming)


A22
Radio
Control
P7
Display
A90
Logic
K9
Body
Control
Module
P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
S91
Parking
Brake
Control
Switch
A90
Logic
A26
Heater and Air
Conditioning
User Interface
Control - Front
A90
Logic
A34
Heater and
Air
Conditioning
Auxiliary
Control
A90
Logic
S38
Automatic
Transmission
Electronic
Control
K212
Gear Shift
Control Module

6885461

# Description and Operation

## Exterior Lighting Systems Description and Operation

The exterior lighting system consist of the following lamps:

- Backup lamps
- Daytime running lamps (DRL)
- Exterior courtesy lamps
- Hazard warning lamps
- Headlamps
- Park, tail, license, and marker lamps
- {T40} Front fog lamps
- {B3L} Running board lamps
- Stop lamps
- Turn signal lamps
- Trailer lighting, refer to *Trailering Description and Operation 2-62* for more information.

## Low Beam Headlamps

The headlamps may be turned ON in 3 different ways:

- When the headlamp switch is placed in the ON position, for normal operation
- When the headlamp switch is placed in the AUTO position, for automatic lamp control during low ambient light conditions
- When the headlamp switch is placed in the AUTO position, with the windshield wipers ON in daylight conditions, after a 6 second delay

The K9 Body Control Module (BCM) monitors three signal circuits from the S30 Headlamp Switch. When the headlamp switch is in the AUTO position, the three signal circuits are unaffected (open) and the BCM relies on the B10D Sun Load and Ambient Light and Security Indicator Sensor input to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. When the headlamp switch is placed in the headlamp OFF position, the headlamp switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the headlamp switch in the PARK LAMPS position, the headlamp switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the headlamp switch is in the HEADLAMP position, both the headlamp switch park lamps ON signal circuit and the headlamps ON signal circuit are grounded. The BCM responds to these inputs by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp low beam control circuits, illuminating the low beam headlamps. When the Lighting Control Module commands the low beam headlamps ON, the operator will notice the interior backlighting for the instrument cluster and the various other switches dim to the level of brightness selected by the instrument panel dimmer switch.

## High Beam Headlamps

The high beam and flash to pass (FTP) functions are contained within the S78 Turn Signal Switch. The K9 Body Control Module (BCM) provides the turn signal/ multifunction switch with two signal circuits, the high beam signal circuit and the FTP signal circuit. When the low beam headlamps are ON, and the turn signal/ multifunction switch is placed in either the high beam position or FTP position, ground is applied to the BCM through the high beam/FTP signal circuit. The BCM responds to the high beam request by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp high beam control circuits, illuminating the high beam headlamps. The status of the high beam lamps is shown by a blue indicator located on the instrument cluster. When high beams are commanded on, the indicator will be illuminated continuously. If the driver turns the high beams off, the indicator will also turn off.

## Animation Lighting

Animation lighting illuminates in the front and rear lamps of the vehicle anytime the vehicle is unlocked or upon approach with key fob (if equipped with approach detection) during dark ambient light conditions. Animation lighting is commanded on with a pulse width modulated (PWM) signal voltage from the K219 Lighting Control Module through signal circuit 2024.

## Flash to Pass

When the S78 Turn Signal Switch is momentarily placed in the flash to pass position, ground is applied to the turn signal/multifunction switch. The turn signal/ multifunction switch applies ground to the K9 Body Control Module (BCM) through the flash to pass switch signal circuit. The BCM responds to the flash to pass request by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp high beam control circuits, illuminating the high beam headlamps. This causes the high beam headlamps to illuminate at full brightness until the turn signal/multifunction switch is returned to the at rest position.

## Automatic Headlamp Control

The K9 Body Control Module (BCM) monitors three signal circuits from the S30 Headlamp Switch. When the headlamp switch is in the AUTO position, the three signal circuits are unaffected (open) and the BCM relies on the B10D Sun Load and Ambient Light and Security Indicator Sensor input to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. During automatic lamp control, the headlamps will be off during daylight conditions but will turn on when the ambient light sensor detects low ambient light conditions. The ambient light sensor is a light sensitive transistor that varies the voltage signal to the BCM. The BCM provides a 5 volt reference signal and a low reference ground to the ambient light sensor. During low light conditions the BCM will request the low beam headlamps ON by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both headlamp low beam control circuits, illuminating the low beam headlamps.

## Automatic High Beam Assist (TQ5)

The automatic high beam assist (IntelliBeam) system operates the high beam headlamps ON and OFF automatically when the system is activated and certain conditions are met. The IntelliBeam system consists of a front camera module that detects light and is able to identify approaching vehicles on an even, straight road at a distance of greater than 0.4 km (0.25 mi). The front camera module analyzes light color, intensity, and movement. The IntelliBeam system will turn OFF the high beam headlamps when approaching vehicle headlamps or preceding vehicle taillights are detected by the front camera module. On vehicles equipped with Side Blind Zone Alert, IntelliBeam will proactively turn OFF the high beam headlamps when a vehicle is passing on the left or right side. IntelliBeam can be deactivated when the headlamp dimmer switch is moved from the neutral position to the high beam or flash to pass positions. IntelliBeam can be reactivated by operating the high beam select switch from the neutral position to the high beam position twice within 2 seconds.

### IntelliBeam System Activation

- Vehicle ON
- Headlamp switch placed in the AUTO or ON position
- Outside lighting conditions must be dark
- Vehicle speed greater than 25 mph (40 km/h)

### IntelliBeam System Operation

The following are conditions that the IntelliBeam system will turn the high beam headlamps off during operation:

- The system detects approaching traffic headlamps
- The system detects preceding traffic tail lamps
- The system detects a vehicle passing to the right or left (SBZA equipped only)
- Ambient light level too high due to towns or twilight situations
- The vehicle’s speed drops below 13 mph (22 km/h)
- Delay

**Note:** IntelliBeam may not operate properly if any of the following conditions exist:

- Approaching and preceding vehicles lamps are undetectable due to dirt, snow, road spray, smoke, fog, or any other airborne conditions.
- The front camera module and/or side object sensor module(s) is covered with ice, dirt, snow, haze, or is obstructed.
- The vehicle is being driven on winding or hilly road conditions which would make any on coming

vehicle headlamps undetectable by the IntelliBeam.

**IntelliBeam System Deactivation**

- Manually operating the headlamp switch from neutral to high beam position
- IntelliBeam is deactivated automatically when the front fog lamps are turned ON

**IntelliBeam System Indicator**
The status of the IntelliBeam system is shown by a green indicator located on the instrument panel cluster. When IntelliBeam is active, the indicator will be illuminated continuously. If the operator deactivates the IntelliBeam system, the indicator will turn off.

### Daytime Running Lamps

The daytime running lamps (DRL) will illuminate continuously when the following conditions are met:

- Engine running
- The headlamp switch is in the AUTO position
- Ambient light conditions are daytime conditions

The B10D Sun Load and Ambient Light and Security Indicator Sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary between 0.2 and 4.9 volts depending on outside lighting conditions. The K9 Body Control Module (BCM) provides a 5 volt reference signal and a low reference ground to the ambient light sensor. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lamps (DRL) or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will send a serial data message to the K219 Lighting Control Module to command the DRLs ON, the Lighting Control Module responds by applying pulse width modulated (PWM) voltage to both DRL control circuits, illuminating the DRLs. During low light conditions the Lighting Control Module will command the low beam headlamps ON.

### Hazard Lamps

The hazard flashers may be activated in any power mode. The S26 Hazard Warning Switch signal circuit is momentarily grounded when the hazard switch is pressed. The K9 Body Control Module (BCM) responds to the hazard switch signal input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by supplying battery voltage to all turn signal lamps in an ON and OFF duty cycle. When the hazard switch is activated, the BCM also sends a serial data message to the instrument cluster requesting both turn signal indicators to be cycled ON and OFF.

### Park, Tail, and License Lamps

When the S30 Headlamp Switch is placed in the HEAD or PARK position, ground is applied to the park lamp switch ON signal circuit to the K9 Body Control Module (BCM). The BCM responds to the park lamp switch signal input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying battery voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

### {T40} Front Fog Lamps

The S30 Headlamp Switch is used to control the fog lights when equipped. The K9 Body Control Module (BCM) provides a 5V signal circuit and low reference circuit to the headlamp switch for backlight dimming and fog light controls. When a dimming/fog light button is pressed, the signal circuit becomes grounded through the appropriate resistor internal to the headlight switch and voltage from the BCM will decrease accordingly. The BCM interprets the signal and responds by sending a serial data message to the K219 Lighting Control Module. The lighting control module responds by applying pulse width modulated (PWM) voltage to the appropriate fog light(s).

### {B3L} Running Board Lamps

When equipped (B3L), the running board assist step lamps become illuminated anytime unlock is pressed on the keyless entry transmitter or any door is opened during low ambient light conditions as part of the approach lighting system. The K9 Body Control Module responds to the unlock request or door opening during low ambient light conditions by sending a serial data message to the K4 Running Board Control Module to command the running board assist step lamps on. The running board control module responds by applying voltage to the running board assist step lamp control circuits illuminating the running board assist step lamp LEDs.

## Stop Lamps

The B22 Brake Pedal Position Sensor is used to sense the action of the driver application of the brake pedal. The K9 Body Control Module (BCM) provides the brake pedal position sensor with low reference, signal, and 5 volt reference circuits. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will respond by sending a serial data message to the K219 Lighting Control Module requesting the stop lamps to be turned ON. The Lighting Control Module responds by applying battery voltage to the left and right stop lamp control circuits as well as the center high mounted stop lamp control circuit illuminating the left and right stop lamps and the center high mounted stop lamp. If serial data communication is lost between the BCM and the Lighting Control Module, the Lighting Control Module will receive a serial data message from the Electronic Brake Control Module indicating that the brakes have been applied. If serial data communication is lost between all three modules, the Lighting Control Module also receives a hard wired voltage signal from the BCM to signal the brake lamps ON.

## Turn Signal Lamps

### Turn Signals

The K9 Body Control Module (BCM) provides the S78 Turn Signal Switch with left and right turn signal switch signal circuits. Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the turn right or turn left position, ground is applied to the BCM through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by sending a serial data message to the K219 Lighting Control Module. The Lighting Control Module responds by applying a pulsating voltage to the turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is also sent to the instrument cluster requesting the respective turn signal indicator be pulsed ON and OFF.

### Turn Signal Outage Detection

Vehicles with LED turn signals require additional turn signal outage detection circuits that provide turn signal feedback to the K219 Lighting Control Module. The Lighting Control Module uses the feedback information to send a serial data message to the instrument cluster to alert the driver anytime a turn signal fault is detected. If a fault is detected on a turn signal circuit or a turn signal feedback circuit, the turn signals will flash in a rapid manner to alert the driver of the fault.

### Turn Signal Animation

When the K219 Lighting Control Module receives a serial data message from the K9 Body Control Module (BCM) that the turn signals are being commanded on, the lighting control module responds by applying voltage to the sequential turn lamp enable signal circuit 10749. With voltage applied to the sequential turn lamp enable signal circuit, the front and rear lamps respond by applying an animation effect to the turn signal lamp within the lamp assembly. A fault on the sequential turn lamp enable signal will inhibit the animation effect, however normal turn signal operation will still take place.

## Backup Lamps

With the engine running and the transmission in the reverse position, the transmission control module (TCM) sends a serial data message to the multiple control modules. The message indicates that the gear selector is in the reverse position. The K9 Body Control Module (BCM) responds to the reverse position message by sending a serial data message to the K219 Lighting Control Module to request the backup lamps on. The Lighting Control Module responds by applying battery voltage to the backup lamps control circuit(s) illuminating the backup lamps. The applied voltage is also sent to the A11 Radio and A10 Inside Rearview Mirror for rearview camera purposes. Once the driver moves the gear selector out of the reverse position, a serial data message is sent by the TCM that the transmission is no longer in the reverse position. The BCM responds to the reverse position message by sending a serial data message to the Lighting Control Module to request the backup lamps off. The Lighting Control Module responds by removing battery voltage from the backup lamp circuits. The engine must be running for the backup lamps to operate.

## Exterior Courtesy Lamps

The body control module (BCM) supplies battery voltage to each exterior door handle LED backlighting circuit, the LED lighting located under each outside rearview mirror for approach lighting, and both running board step courtesy lamps when equipped. When the keyless entry transmitter is operated to either the lock or unlock functions the LED lighting located under each outside rearview mirror, exterior door handles, and both running board steps are commanded ON for approach lighting.

## Battery Run Down Protection/Inadvertent Power

To provide battery run down protection, the exterior lamps will be deactivated automatically under certain conditions. The K9 Body Control Module (BCM) monitors the state of the S30 Headlamp Switch. If the headlamp switch is in the park or headlamp position when the ignition switch is ON and then the ignition switch is placed in the OFF position, the BCM initiates a 10 minute timer. At the end of the 10 minutes, the BCM will send a serial data message to the K219 Lighting Control Module to deactivate the exterior lamps to prevent total battery discharge. This feature will be cancelled if any power mode other than OFF becomes active.

The BCM will disable battery run down protection if any of the following conditions exist:

- The park or headlamp switch is changed from the ON to OFF position, and back to the ON position during battery run down protection.
- The BCM determined that the park or headlamp switch was not active when the ignition was turned OFF.

## Interior Lighting Systems Description and Operation

### Interior Lamps

The interior lighting system consist of two groups. This first group includes lamps that are not be dimmed.

- Dome/reading lamps
- Door Sill Plate Lamps (B7G/S0M)
- Instrument panel compartment lamp
- Instrument panel courtesy lamps
- Overhead console accent lamp
- Rear compartment courtesy lamp
- Sunshade mirror lamps

**Dome Lamps**
The dome lamps are controlled by door ajar inputs to the K9 Body Control Module (BCM). When any door is opened, the door ajar switch contacts close and the BCM receives a door-open input. The BCM illuminates the dome lamp when any door is opened or a door lock/unlock request is activated with the key fob. After all doors have been closed, the dome lamp will remain illuminated approximately 3 seconds after the last door closes. In the event that the dome lamp were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the dome lamp control circuit to prevent total battery discharge. The dome lamps will turn OFF using the theater dimming feature when controlled by the BCM.

**Door Sill Plate Lamps (B7G/S0M)**
The K9 Body Control Module (BCM) detects anytime an exterior door is opened. The BCM responds by applying voltage to the door sill illumination lamp control circuits illuminating the door sill lamps anytime a door is opened as part of entry lighting.

**Keyless Entry Interior Illumination**
When the operator uses the keyless entry transmitter in order to unlock the doors, the K9 Body Control Module (BCM) receives a door-unlock signal. The BCM must receive inputs from various systems that indicate that the ignition switch is OFF, the courtesy lamp switch is OFF, and all doors are closed before the BCM will activate the interior lamps. After all doors have been closed, the courtesy lamps will turn OFF immediately if the ignition switch is turned to the ON position, the door locks are LOCKED, or approximately 20 seconds after the last door closes. The BCM will turn off the courtesy lamps through the theater dimming feature. The BCM keeps the courtesy lamps on for 40 seconds after an alarm event is completed.

**Instrument Panel Compartment Lamp**
The inadvertent power supply voltage circuit from the K9 Body Control Module (BCM) provides battery voltage to the instrument panel compartment (glove box) lamp. When the instrument panel compartment is opened, the instrument panel compartment lamp switch contacts close providing a path to ground and the instrument panel compartment lamp illuminates. If the operator inadvertently leaves the instrument panel compartment door open with the instrument panel compartment lamp ON, the BCM will turn all interior lamps OFF after 10 minutes has passed to prevent total battery discharge.

**Reading Lamps**
The inadvertent power supply voltage circuit from the K9 Body Control Module (BCM) provides battery positive voltage to each reading lamp. When a reading lamp switch is activated, the switch contacts close providing a path to ground and the reading lamp illuminates. If the operator inadvertently leaves a reading lamp ON, the BCM will turn all interior lamps OFF after 10 minutes has passed to prevent total battery discharge.

**Rear Compartment Courtesy Lamps**
When the rear compartment is opened, the rear compartment lid latch opens providing a rear compartment open input signal to the K9 Body Control Module (BCM). The BCM responds by applying battery voltage to the rear compartment courtesy lamp control circuit illuminating the rear compartment courtesy lamps. If the operator inadvertently leaves the rear compartment lid open, the BCM will turn all interior lamps OFF after 10 minutes has passed to prevent total battery discharge.

**Sunshade Mirror Lamp**
The inadvertent power supply voltage circuit from the K9 Body Control Module (BCM) provides battery voltage to the passenger side sunshade mirror lamp. When the sunshade mirror cover is opened, a switch closes providing ground and the sunshade lamp illuminates. If the operator inadvertently leaves the sunshade mirror cover open with the lamp ON, the BCM will turn all interior lamps OFF after 10 minutes has passed to prevent total battery discharge.

### Interior Lamps Dimming

The second group includes lamps which may be dimmed. This group may use a combination of light emitting diodes (LED), incandescent lamps, and pulse width modulation (PWM) voltage illumination.

- Audio/Video Input Adapter
- Door lock switch – driver
- Door lock switch – passenger
- Door handle switch – driver interior
- Door handle switch – passenger interior
- Hazard switch
- Hood/liftgate release switch
- HVAC control head assembly
- Ignition mode switch
- Instrument panel dimmer switch
- Multifunction switch – center console
- Multifunction switch – instrument panel
- Outside rearview mirror switch
- Park brake switch
- Radio
- Rear compartment lid unlatch switch
- Seat memory switch – driver
- Seat memory switch – passenger
- Steering wheel controls switch – left
- Steering wheel controls switch – radio presets
- Steering wheel controls switch – radio volume
- Window switch – driver
- Window switch – passenger

With the headlamp switch in the PARK or HEAD position, the park lamp switch signal circuit provides an input to the K9 Body Control Module (BCM). The BCM responds by applying voltage to the backlight dimming control circuits illuminating all components with interior backlighting. All interior backlighting turns on at the dimming level set by the dimmer buttons within the headlamp switch. The headlamp switch is used to increase and decrease the brightness of the interior backlighting components. The BCM provides a signal circuit and a low reference circuit to the headlamp switch for backlight dimming. When a dimming button is pressed, the signal circuit becomes grounded through the appropriate resistor internal to the headlight switch and voltage from the BCM will decrease accordingly. The BCM interprets the signal and responds in two ways. The BCM applies a pulse width modulated (PWM) voltage through the LED dimming control circuits illuminating the interior backlighting to the requested level of brightness. The BCM also sends a serial data message to the appropriate control modules requesting all dimming components to be illuminated to the same level of brightness.

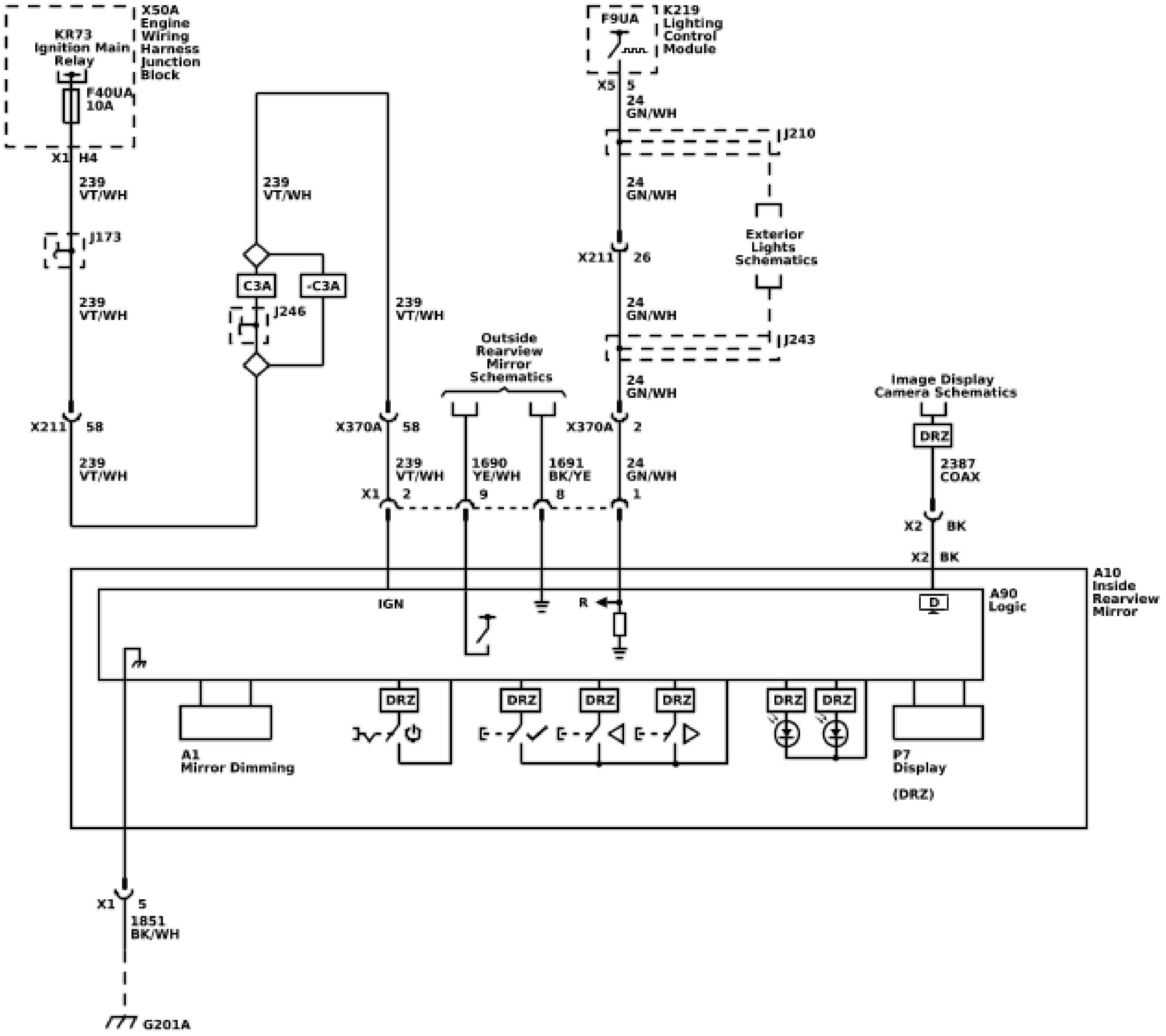
### Battery Rundown Protection/Inadvertent Power

The K9 Body Control Module (BCM) inadvertent power supply voltage circuit provides battery voltage to all of the interior courtesy lamps. In the event that any of these lamps were to remain illuminated for a period of more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power supply voltage circuit to prevent total battery discharge. If the ignition switch is turned to any position other than OFF, or if a lamp switch is activated during this 10 minute period, the timer resets for another 10 minutes.

# Mirrors

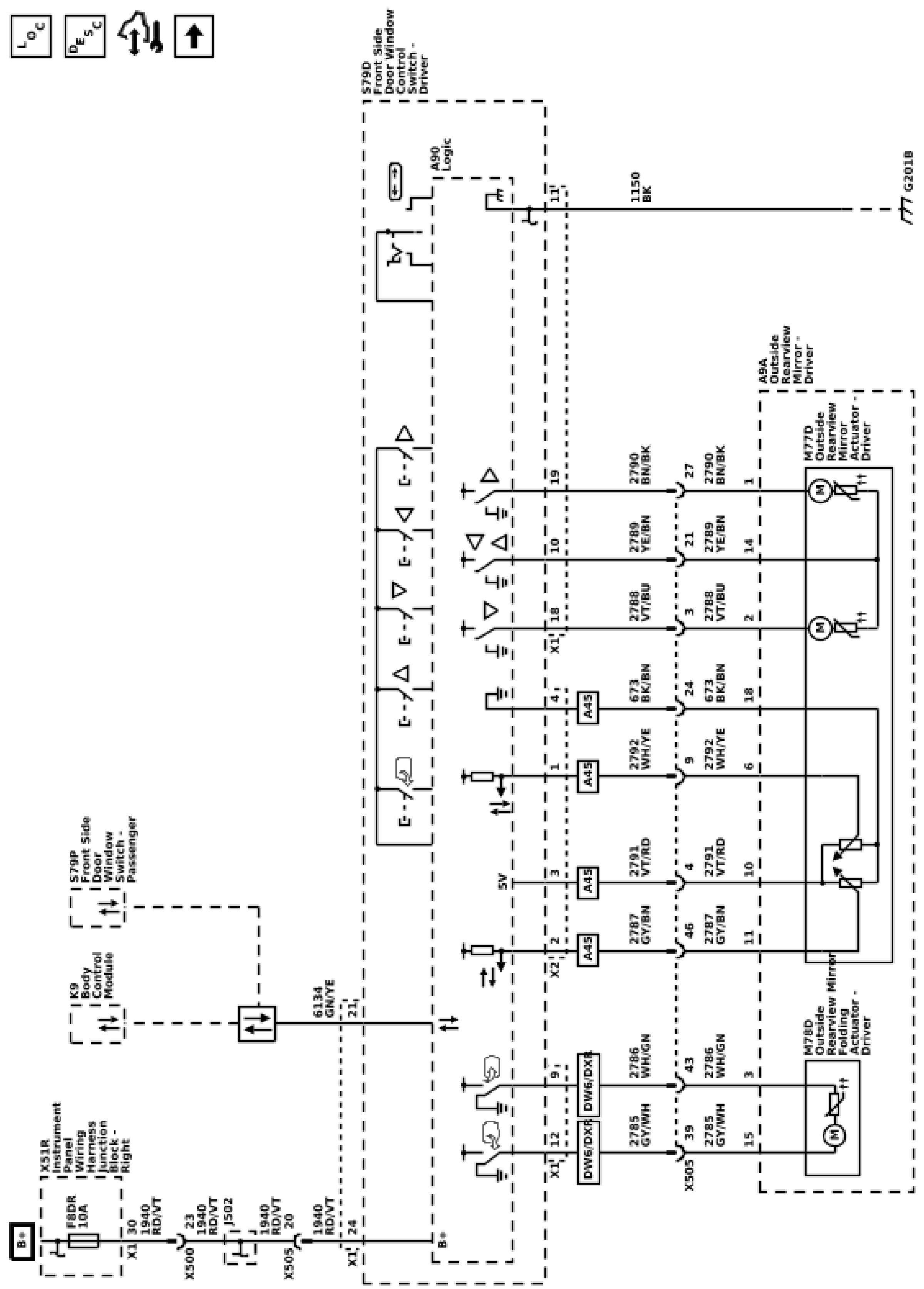
## Schematic and Routing Diagrams

## Inside Rearview Mirror Schematics (Inside Rearview Mirror (DD8 / DRZ))


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F40UA 10A
X1 H4
239 VT/WH
J173
239 VT/WH
X211 58
239 VT/WH
239 VT/WH
C3A
-C3A
J246
239 VT/WH
X370A 58
239 VT/WH
X1 2
Outside Rearview Mirror Schematics
1690 YE/WH
9
1691 BK/YE
8
K219 Lighting Control Module
F9UA
X5 5
24 GN/WH
J210
24 GN/WH
X211 26
Exterior Lights Schematics
24 GN/WH
J243
24 GN/WH
X370A 2
24 GN/WH
1
Image Display Camera Schematics
DRZ
2387 COAX
X2 BK
X2 BK
A10 Inside Rearview Mirror
A90 Logic
IGN
R
D
DRZ
DRZ
DRZ
DRZ
DRZ
DRZ
A1 Mirror Dimming
P7 Display
(DRZ)
X1 5
1851 BK/WH
G201A

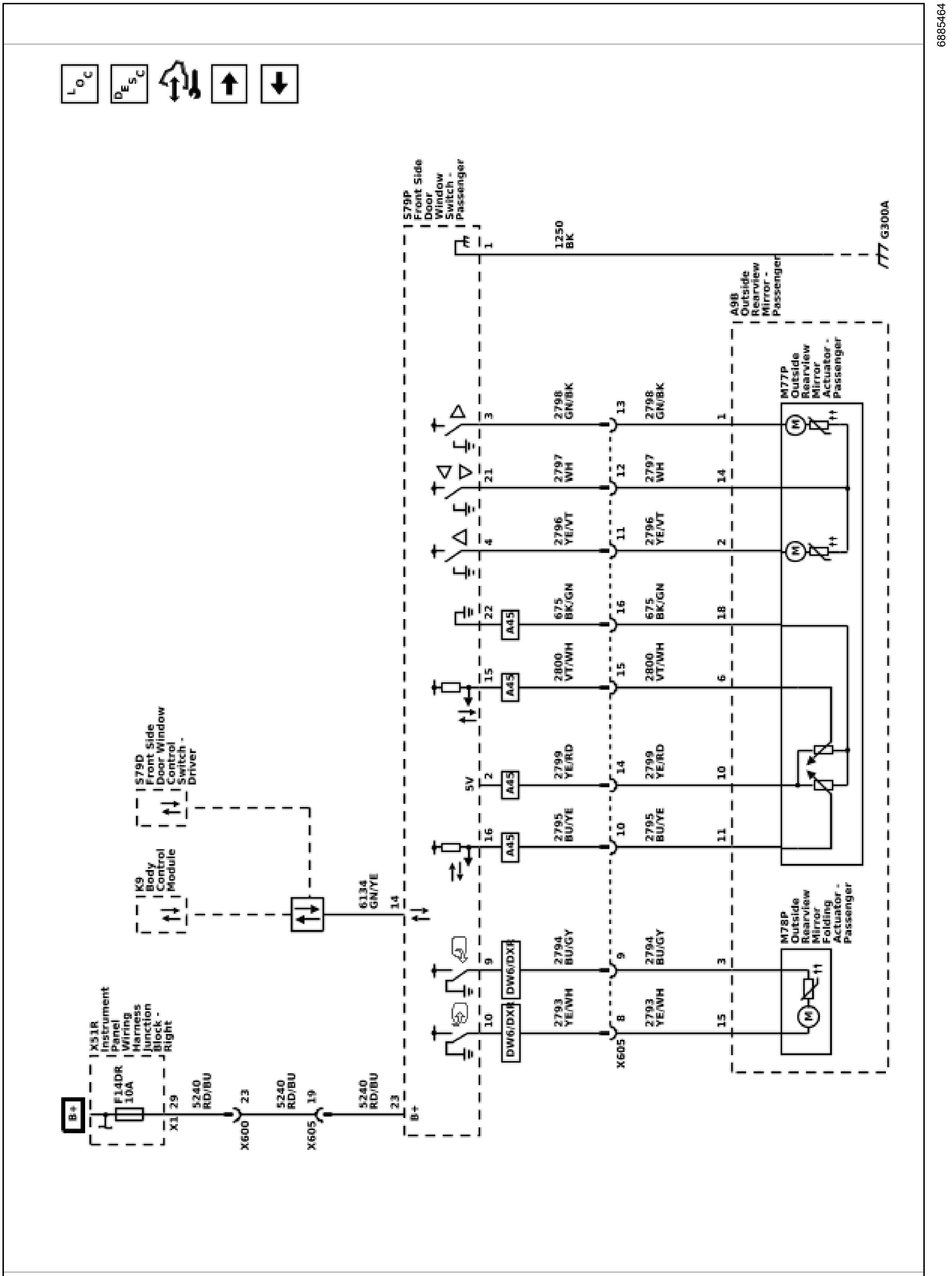
6885462

## Outside Rearview Mirror Schematics (Controls, Driver Position, and Folding)

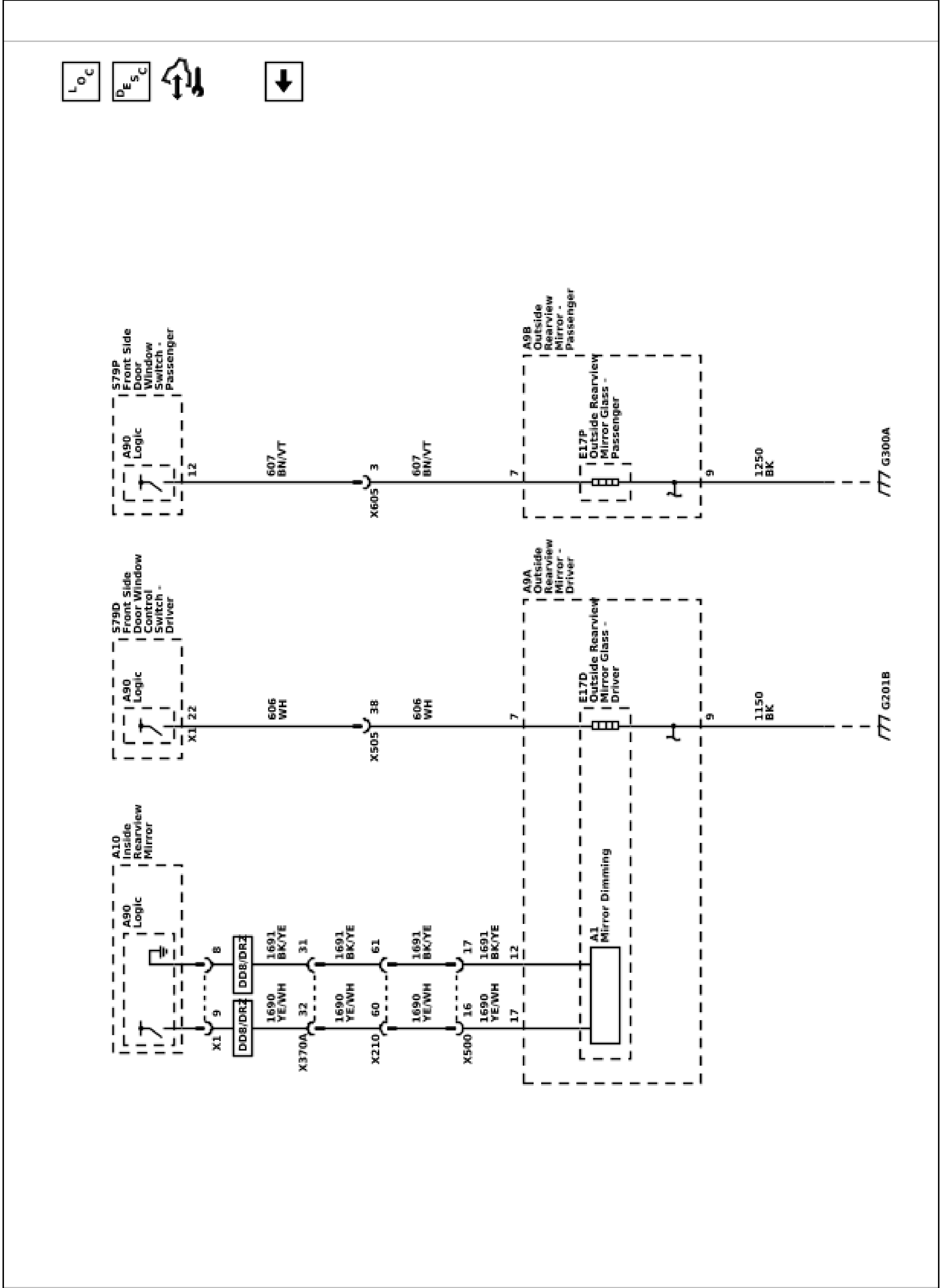


6885463
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F8DR 10A
X1 30
1940 RD/VT
X500 23
1940 RD/VT
J502
1940 RD/VT
X505 20
1940 RD/VT
X1 24
K9 Body Control Module
S79P Front Side Door Window Switch - Passenger
6134 GN/YE
21
S79D Front Side Door Window Control Switch - Driver
A90 Logic
B+
5V
X1 12
9
DW6/DXR
DW6/DXR
X2 2
A45
3
A45
1
A45
4
A45
X1 18
10
19
11
2785 GY/WH
2786 WH/GN
2787 GY/BN
2791 VT/RD
2792 WH/YE
673 BK/BN
2788 VT/BU
2789 YE/BN
2790 BN/BK
1150 BK
X505 39
43
46
4
9
24
3
21
27
2785 GY/WH
2786 WH/GN
2787 GY/BN
2791 VT/RD
2792 WH/YE
673 BK/BN
2788 VT/BU
2789 YE/BN
2790 BN/BK
15
3
11
10
6
18
2
14
1
G201B
A9A Outside Rearview Mirror - Driver
M77D Outside Rearview Mirror Actuator - Driver
M78D Outside Rearview Mirror Folding Actuator - Driver
M
M
M

# Outside Rearview Mirror Schematics (Passenger Position and Folding)


6885464
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F14DR 10A
X1 29
5240 RD/BU
X600 23
5240 RD/BU
X605 19
5240 RD/BU
23 B+
K9 Body Control Module
S79D Front Side Door Window Control Switch - Driver
6134 GN/YE
14
S79P Front Side Door Window Switch - Passenger
10
9
16
5V 2
15
22
4
21
3
1
DW6/DXR
DW6/DXR
A45
A45
A45
A45
2793 YE/WH
2794 BU/GY
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
1250 BK
G300A
X605
8
9
10
14
15
16
11
12
13
2793 YE/WH
2794 BU/GY
2795 BU/YE
2799 YE/RD
2800 VT/WH
675 BK/GN
2796 YE/VT
2797 WH
2798 GN/BK
A98 Outside Rearview Mirror - Passenger
15
3
11
10
6
18
2
14
1
M78P Outside Rearview Mirror Folding Actuator - Passenger
M77P Outside Rearview Mirror Actuator - Passenger
M
M
M

## Outside Rearview Mirror Schematics (Dimming and Heating)


6885465
A10
Inside
Rearview
Mirror
A90
Logic
X1 8
X1 9
DD8/DR2
1691
BK/YE
1690
YE/WH
X370A 31
X370A 32
X210 61
X210 60
X500 17
X500 16
12
17
A1
Mirror Dimming
S79D
Front Side
Door Window
Control
Switch -
Driver
A90
Logic
X1 22
606
WH
X505 38
7
A9A
Outside
Rearview
Mirror -
Driver
E17D
Outside Rearview
Mirror Glass -
Driver
9
1150
BK
G201B
S79P
Front Side
Door
Window
Switch -
Passenger
A90
Logic
12
607
BN/VT
X605 3
7
A9B
Outside
Rearview
Mirror -
Passenger
E17P
Outside Rearview
Mirror Glass -
Passenger
9
1250
BK
G300A

# Description and Operation

## Automatic Day-Night Mirror Description and Operation

### Inside Rearview Mirror with the Automatic Day-Night Feature System Operation

The inside rearview mirror uses 2 photocell sensors. One sensor is the headlight sensor, located on the face side of the mirror. The headlight sensor is used to determine light conditions present at the mirror face. The other sensor is the ambient light sensor, located on the rear of the mirror or windshield side. The ambient light sensor is used to determine the exterior light conditions. With a low exterior light condition detected, and a high light condition from behind the car at the headlight sensor, the inside rearview mirror will automatically darken the face of the mirror.

In the daytime, the mirror is in a normal state because of the high exterior light condition that is indicated by the ambient light sensor. With the gear selector lever in the REVERSE position and the Ignition ON/Vehicle in Service Mode, backup lamp supply voltage is supplied as an input to the inside rearview mirror. The mirror monitors this input to disable the automatic day-night feature. This allows the driver to see objects in the mirror clearly when backing up, even during the night.

### Driver Outside Rearview Mirror with Automatic Day-Night System Operation (If Equipped)

The automatic day-night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies control and low reference to the driver outside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce glare from headlamps behind the vehicle.

### Inside Rearview Camera Full Display Mirror System Operation

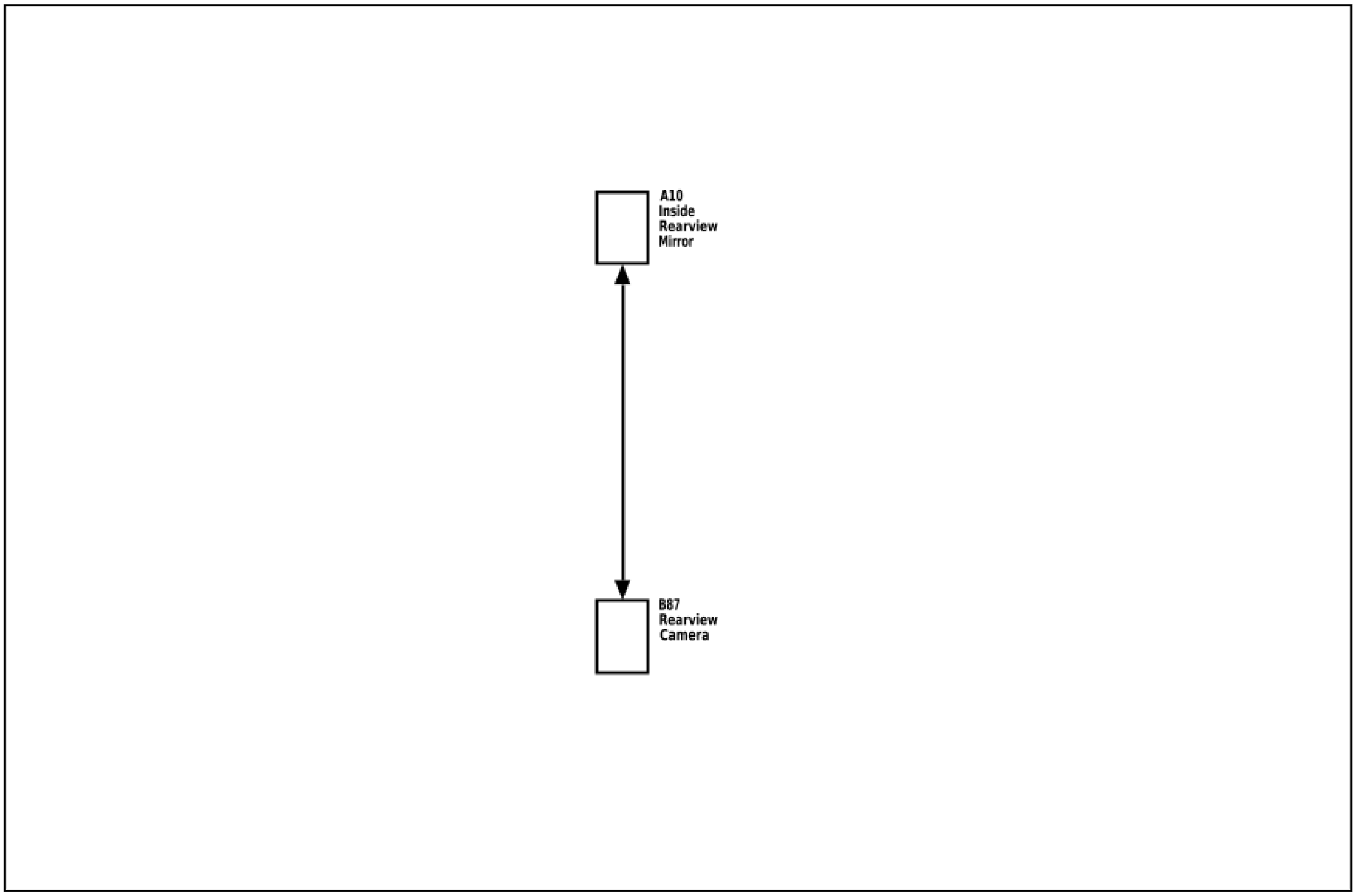
The A10 Inside Rearview Mirror is connected to the B352 Video Display inside Rearview Mirror Camera via a shielded coaxial cable. When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror. Adjust the rearview mirror for a clear view of the area behind the vehicle before turning on full display mirror. Use the button on the back of the mirror to adjust the brightness of the display. Make sure the light sensor is not covered when adjusting the brightness.

The inside rearview camera full display mirror may not work properly or display a clear image if:.

- It is dark.
- The sun or the beam of headlamps are shining directly into the camera lens.
- Ice, snow, mud, or anything else builds up on the camera lens. Clean the lens, rinse it with water, and wipe it with a soft cloth.

When the mirror detects that the camera is not sending a valid video signal, it “blue screens” with a “no video” decal for 3 seconds, then reverts back to the mirror.

### Rearview Camera Full Display Mirror Block Diagram



4433072

Hard-Wired

A10 Inside Rearview Mirror

B87 Rearview Camera

## Outside Mirror Description and Operation

### Power Mirror System Components

The power mirror system consists of the following components:

- Body Control Module
- Driver Seat Adjuster Memory Module
- Outside Mirror Switch
- Passenger Window Switch
- Left Outside Rearview Mirror
- Right Outside Rearview Mirror

### Power Mirror System Controls

The outside rearview mirror switch is part of the S79D Driver Front Side Door Window Control Switch and uses serial data to control the passenger mirror through the S79P Passenger Front Side Door Window Control Switch. Each S79 Side Door Window Control Switch has it own 12V, ground and data communications circuit along with mirror directional control and mirror fold circuits.

### Driver Mirror Controls

The S79D Driver Front Side Door Window Control Switch has internal connections for the driver mirror. When the mirror position switch is active the driver mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

## Passenger Mirror Controls

The S79D Driver Front Side Door Window Control Switch uses serial data circuits to communicate the active states for the passenger mirror switch to the S79P Passenger Front Side Door Window Control Switch. The S79P Passenger Front Side Door Window Control Switch has internal connections for the passenger mirror. When the mirror position switch is active the passenger mirror is commanded to move through bi-directional motor control circuits. The motor control circuits are floating while in an inactive state and the switches will apply power and ground to the control circuits as necessary to move the mirror in the commanded direction.

## Mirror Position

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. Each S79 Front Side Door Window Control Switch supplies a 5 V reference, low reference, and horizontal and vertical position signal circuits to these sensors. The signal circuits are referenced from 5 V by the S79 Front Side Door Window Control Switch and the signal circuit voltage levels represent the mirror positions. The mirror positions are stored in each S79 Front Side Door Window Control Switch for memory mirror operation. When the memory seat module receives a memory recall command, the memory seat control module will send the go to position to the S79 Front Side Door Window Control Switch. The S79 Front Side Door Window Control Switches will then drive the appropriate mirror motors to the commanded position sensor settings.

## Mirror Select

The S79D Driver Front Side Door Window Control Switch has internal connections for the mirror select switch. When the mirror select switch is active the S79 Front Side Door Window Control Switch will either control the driver mirror or send a serial data message to control the passenger mirror.

## Folding Mirrors

The S79D Driver Front Side Door Window Control Switch sends the mirror fold/unfold inputs to the K9 Body Control Module (BCM) through serial data. When the BCM receives a fold/unfold signal it will send a fold/unfold command to the S79 Driver Front Side Door Window Control Switch which will send a serial data message to the S79P Passenger Front Side Door Window Control Switch. The outside mirrors will fold or unfold depending on their current state. The BCM will also send a serial data message to unfold the mirrors when the vehicle reaches 20 km/h (12 mph) unless equipped with camper/trailer mirrors. The S79 Front Side Door Window Control Switches control the fold/unfold motors through bi-directional control circuits

## Heated Mirrors

The heated mirrors are controlled through each S79 Front Side Door Window Control Switch. When the vehicle is running and the HVAC control module receives a rear window defog request from the radio/HVAC controls, the HVAC control module will send a serial data message to the S79D Driver Front Side Door Window Control Switch and S79P Passenger Front Side Door Window Control Switch. Each S79 Front Side Door Window Control Switch provide B+ voltage to the driver and passenger outside rearview mirror heating elements.

## Memory Mirror System

### Memory Mirror System Controls

The K40D Driver Seat Adjuster Memory Module is capable of storing mirror positions and controlling the mirrors to these positions to the preferred settings of 2 different drivers. Each driver will be able to personalize the memory system by positioning the mirrors and seats to their preferred settings. Then press and hold the memory 1 or memory 2 button until an audible chime is heard and the current mirror positions will be stored into memory of the K40D Driver Seat Adjuster Memory Module. Seat and mirror position will be stored in the K40D Driver Seat Adjuster Memory Module. Once the mirror and seat positions have been stored into memory, a momentary memory 1 or memory 2 switch activation will supply the S79D Front Side Door Window Control Switch — Driver a battery voltage signal. The S79D Front Side Door Window Control Switch — Driver, upon receipt of the memory switch signal, with the transmission in park or neutral, will then drive the driver mirror to the corresponding stored memory position. The S79D Front Side Door Window Control Switch — Driver will also send a message to the S79P Front Side Door Window Switch — Passenger and K40D Driver Seat Adjuster Memory Module indicating that a memory switch activation occurred. The S79P Front Side Door Window Switch — Passenger will then drive the passenger mirror to the corresponding stored memory position. The memory system can also be controlled by any of the following, if programmed to enable/disable the features:

- Auto exit/entry seat positioning
- Mirror and seat position recall on a keyless entry unlock activation
- Mirror and seat position recall on ignition key insertion
- Mirror tilt in reverse

### Memory Mirror System Operation

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch —

Passenger supplies a reference voltage and a low reference to these sensors and determines mirror position through the horizontal and vertical position signal circuits.

The memory switch receives power from the S79D Front Side Door Window Control Switch — Driver through the battery supply voltage circuit and the S79D Front Side Door Window Control Switch — Driver fuse. The S79D Front Side Door Window Control Switch — Driver upon receipt of a memory switch signal input or an appropriate message from the K40D Driver Seat Adjuster Memory Module, the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger will then supply battery voltage and ground to the appropriate power mirror motors through the mirror motor control circuits to move the mirrors to the predetermined positions.

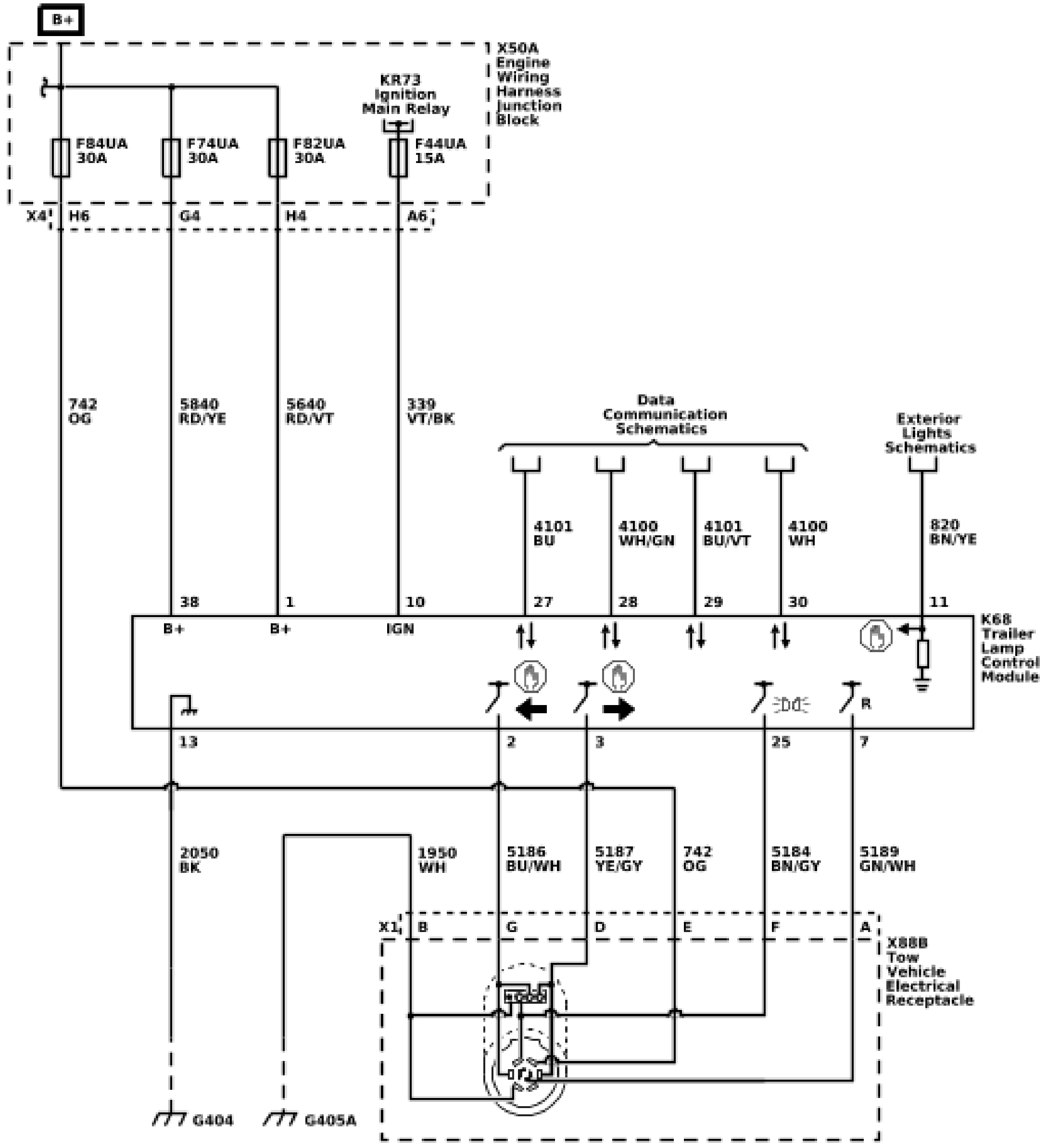
**Mirror Tilt in Reverse Controls**
This feature is capable of tilting the left, right or both power mirrors when the transmission is placed in reverse to provide enhanced visibility during parking or backing maneuvers. This feature can be personalized to the needs of 2 different drivers.

**Mirror Tilt in Reverse Operation**
When the vehicle is placed in reverse and the appropriate message from the K40D Driver Seat Adjuster Memory Module and K20 Engine Control Module is received by the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger, the S79D Front Side Door Window Control Switch — Driver and S79P Front Side Door Window Switch — Passenger will then supply battery voltage to the appropriate power mirror motors through the mirror motor control circuits to move the mirrors to the predetermined positions. The positions that are stored can be altered by starting the engine, applying the brake, placing the vehicle in reverse and controlling both the left and right mirrors to the desired positions and shifting the vehicle out of reverse. These new positions will be stored for the last memory recall that happened.

# Trailering Systems

## Schematic and Routing Diagrams

## Trailering Systems Schematics (Trailer Lamp Control Module and Trailer Connector Pins: A, B, D, E, F, G (UET))


B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F84UA 30A
F74UA 30A
F82UA 30A
F44UA 15A
X4
H6
G4
H4
A6
742 OG
5840 RD/YE
5640 RD/VT
339 VT/BK
Data Communication Schematics
Exterior Lights Schematics
4101 BU
4100 WH/GN
4101 BU/VT
4100 WH
820 BN/YE
38
1
10
27
28
29
30
11
B+
B+
IGN
K68 Trailer Lamp Control Module
R
13
2
3
25
7
2050 BK
1950 WH
5186 BU/WH
5187 YE/GY
742 OG
5184 BN/GY
5189 GN/WH
X1
B
G
D
E
F
A
X88B Tow Vehicle Electrical Receptacle
G404
G405A

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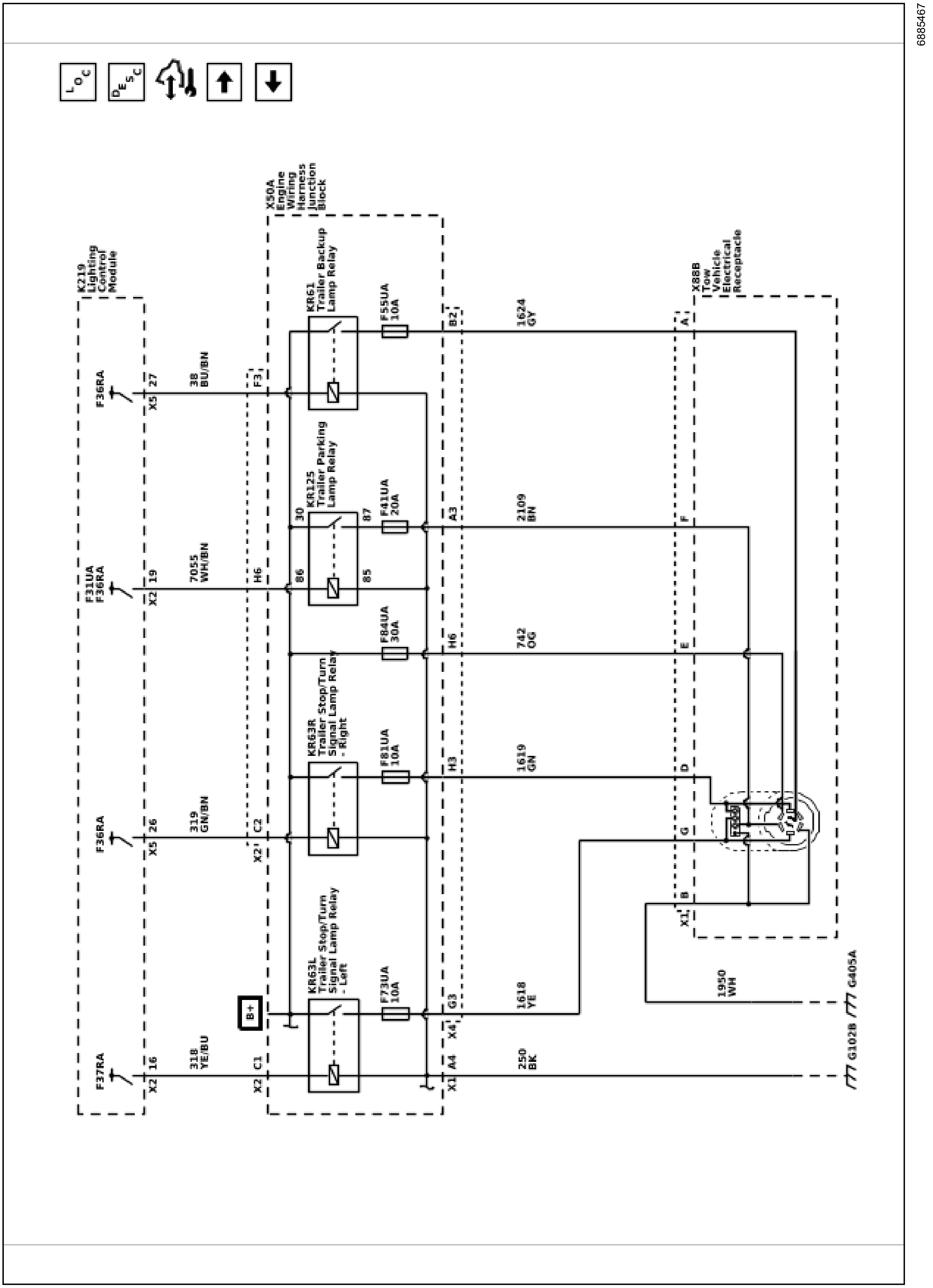
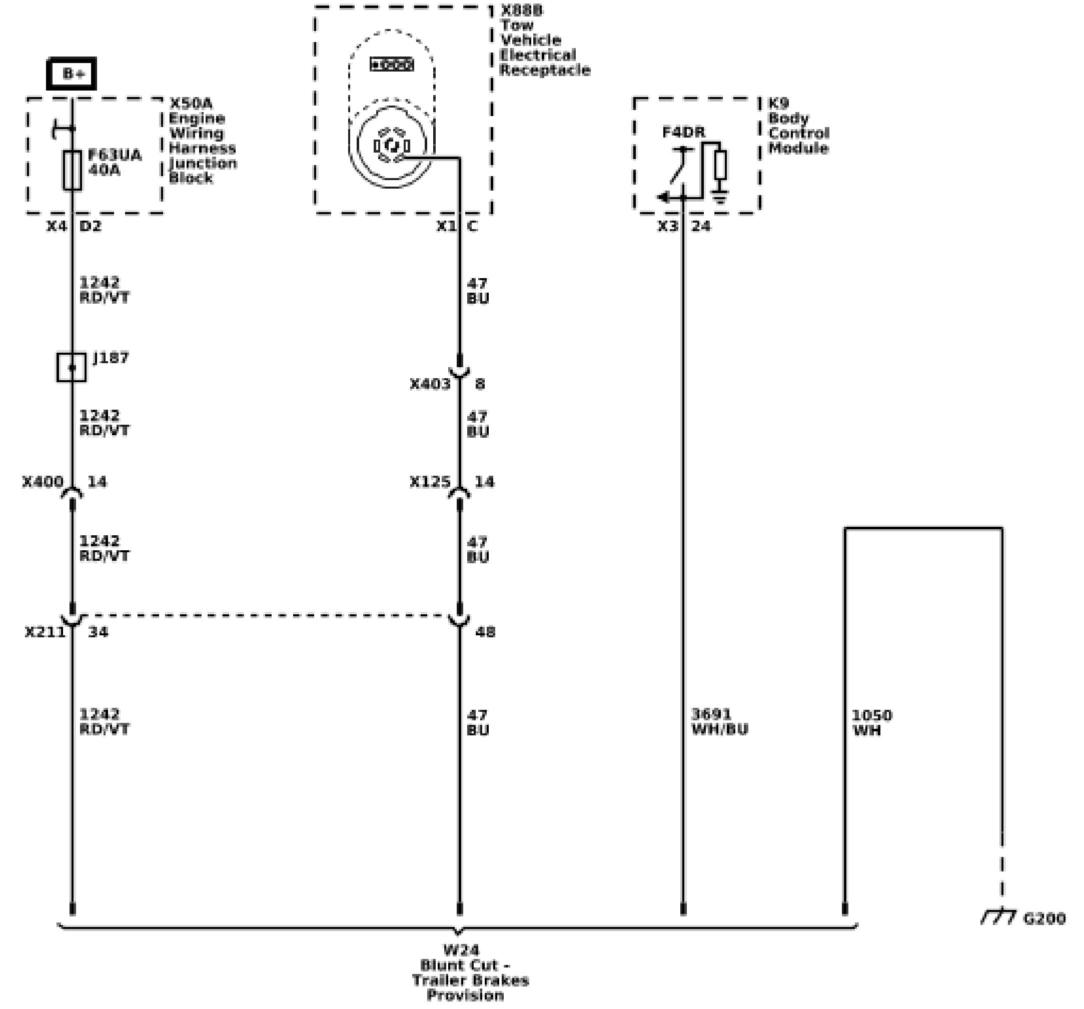
## Trailering Systems Schematics (Trailer Connector Pins: A, B, D, E, F, G (- UET))

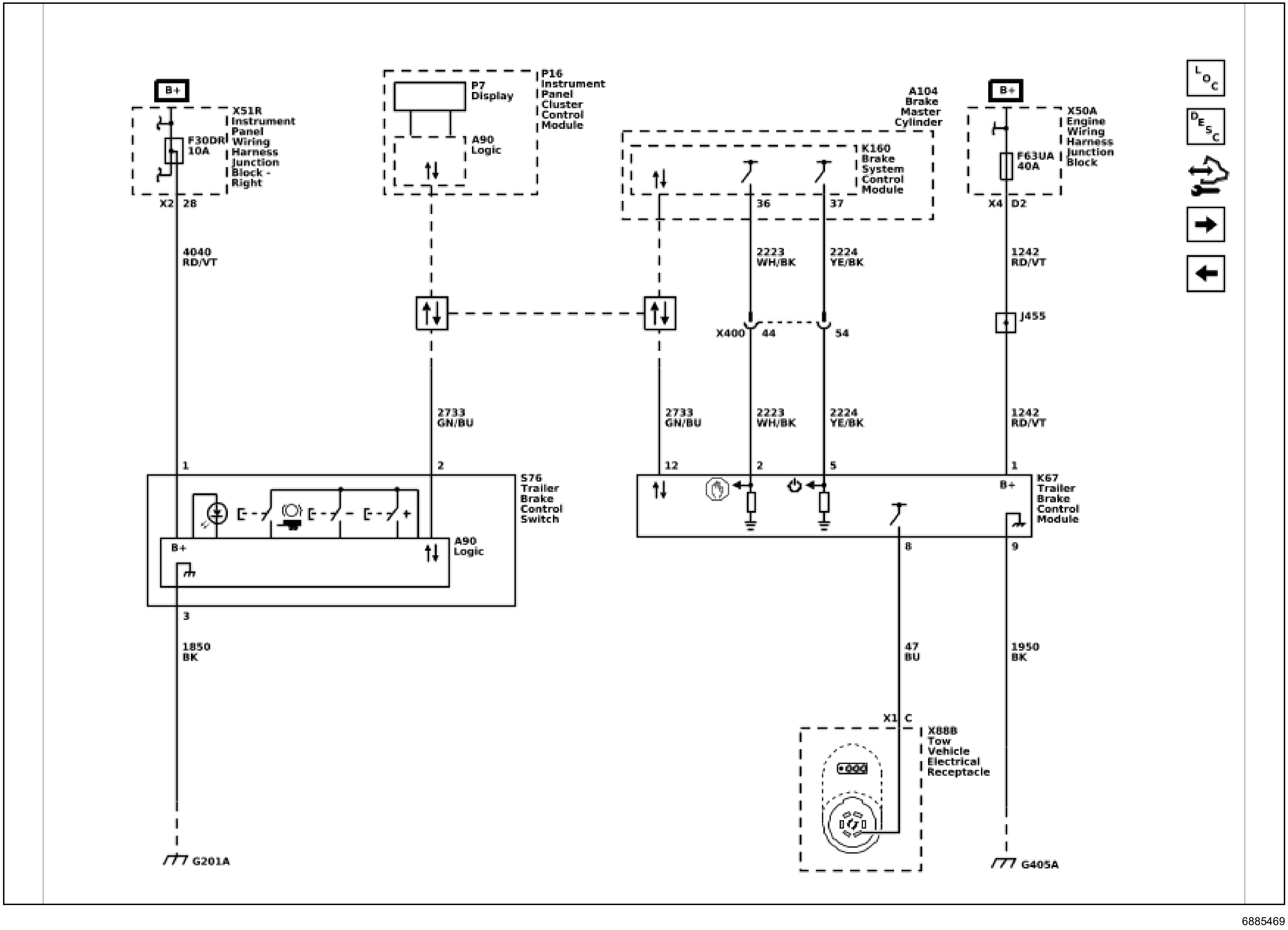

6885467
K219 Lighting Control Module
X50A Engine Wiring Harness Junction Block
X88B Tow Vehicle Electrical Receptacle
KR61 Trailer Backup Lamp Relay
KR125 Trailer Parking Lamp Relay
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
F36RA
F31UA F36RA
F37RA
X5 27
X2 19
X5 26
X2 16
38 BU/BN
7055 WH/BN
319 GN/BN
318 YE/BU
F3
H6
X2 C2
X2 C1
B+
30
86
87
85
F55UA 10A
F41UA 20A
F84UA 30A
F81UA 10A
F73UA 10A
B2
A3
H6
H3
G3
X4
X1 A4
1624 GY
2109 BN
742 OG
1619 GN
1618 YE
250 BK
1950 WH
A
F
E
D
G
X1 B
G405A
G102B

## Trailering Systems Schematics (Trailer Brakes Provision (- JL1))

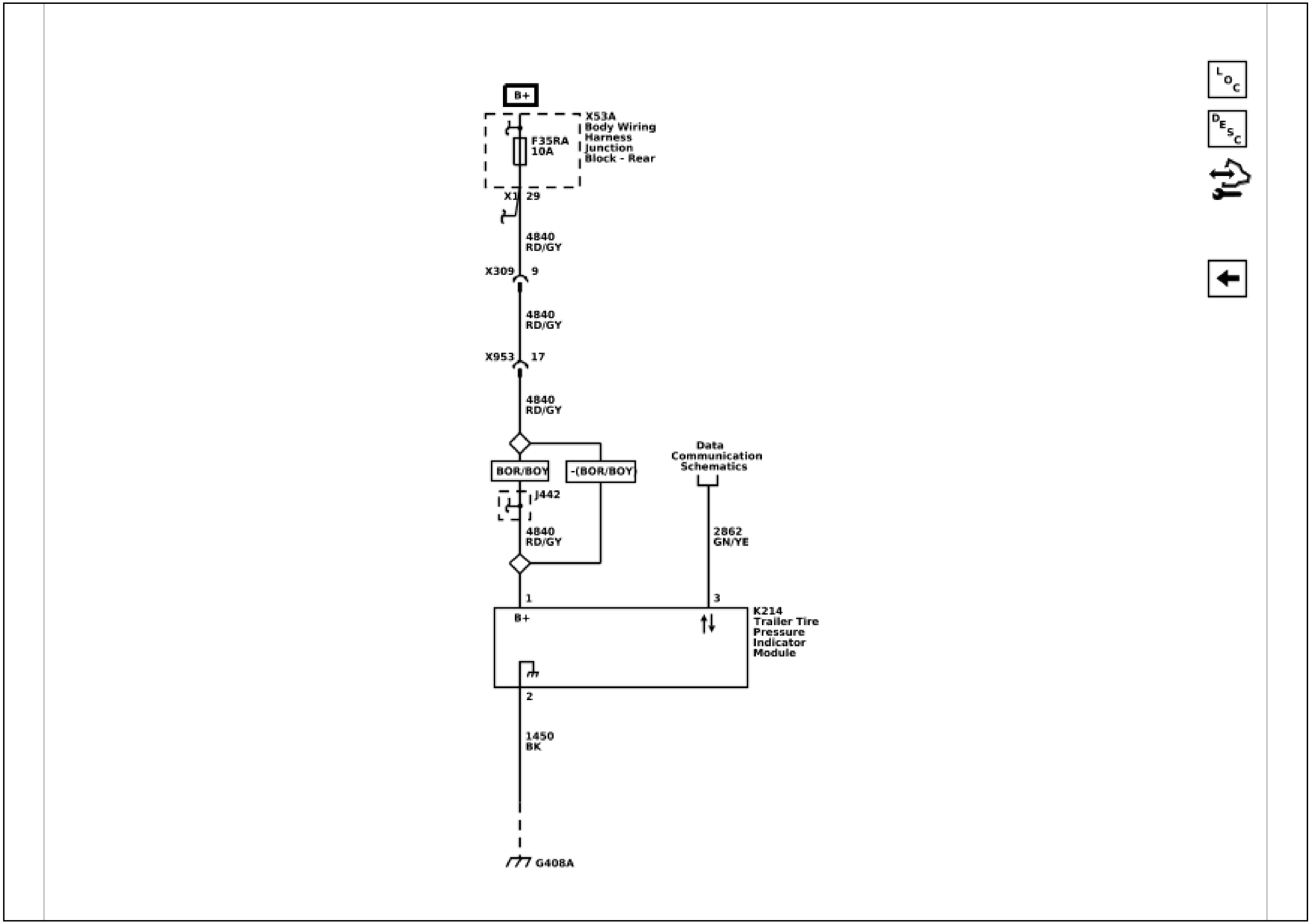

B+
X50A
Engine
Wiring
Harness
Junction
Block
F63UA
40A
X4 D2
1242
RD/VT
J187
1242
RD/VT
X400 14
1242
RD/VT
X211 34
1242
RD/VT
X88B
Tow
Vehicle
Electrical
Receptacle
X1 C
47
BU
X403 8
47
BU
X125 14
47
BU
48
47
BU
K9
Body
Control
Module
F4DR
X3 24
3691
WH/BU
1050
WH
G200
W24
Blunt Cut -
Trailer Brakes
Provision

6885468

## Trailering Systems Schematics (Trailer Brake and Trailer Connector Pin: C (JL1))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X2 28
4040 RD/VT
P7 Display
P16 Instrument Panel Cluster Control Module
A90 Logic
2733 GN/BU
A104 Brake Master Cylinder
K160 Brake System Control Module
36
37
2223 WH/BK
2224 YE/BK
X400 44
54
2733 GN/BU
2223 WH/BK
2224 YE/BK
B+
X50A Engine Wiring Harness Junction Block
F63UA 40A
X4 D2
1242 RD/VT
J455
1242 RD/VT
1
2
S76 Trailer Brake Control Switch
A90 Logic
B+
3
1850 BK
G201A
12
2
5
1
B+
K67 Trailer Brake Control Module
8
9
47 BU
1950 BK
X1 C
X88B Tow Vehicle Electrical Receptacle
G405A
6885469

## Trailering Systems Schematics (Trailer Tire Pressure (UET))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F35RA
10A
X1 29
4840
RD/GY
X309 9
4840
RD/GY
X953 17
4840
RD/GY
BOR/BOY
-(BOR/BOY)
J442
4840
RD/GY
Data
Communication
Schematics
2862
GN/YE
1
3
B+
K214
Trailer Tire
Pressure
Indicator
Module
2
1450
BK
G408A
6885470

# Description and Operation

## Trailering Description and Operation

### Trailering System Overview

Begin the trailering system diagnosis with [Link target (target-id 325938-) not found] . The Diagnostic System Check - Trailering will provide a complete strategy to locate and repair a vehicle trailering electrical fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The trailering system consists of the following:

- Trailer Lighting, refer to [Link target (target-id 326023-) not found] for additional diagnostic information.
- Trailer Brakes, refer to [Link target (target-id 326020-) not found] for additional diagnostic information.
- Trailer Battery Charging System, refer to [Link target (target-id 326019-) not found] for additional diagnostic information.
- Trailer Detection, refer to [Link target (target-id 326022-) not found] for additional diagnostic information.
- Trailer Tire Pressure Monitoring System, refer to [Link target (target-id 326024-) not found] for additional diagnostic information.
- Trailer Theft Detection.

When a trailer is detected on a vehicle equipped with side blind zone detection, rear park assist, and/or rear cross traffic alert, the vehicle will automatically turn these features off. These features are turned off to prevent false detections due to the trailer obstructing the view of the sensors.

**7–Terminal Tow Vehicle Electrical Receptacle Pinout (North America)**

- Terminal A – Trailer Backup Lamp Control
- Terminal B – Ground
- Terminal C – Trailer Brake Control
- Terminal D – Right Trailer Stop/Turn Signal Lamp Control
- Terminal E – B+
- Terminal F – Trailer Park Lamp Control
- Terminal G – Left Trailer Stop/Turn Signal Lamp Control

**13–Terminal Tow Vehicle Electrical Receptacle Pinout (Export)**

- Terminal 1 – Left Trailer Turn Signal Lamp Control
- Terminal 2 – Trailer Fog Lamp Control
- Terminal 3 – Ground
- Terminal 4 – Right Trailer Turn Signal Lamp Control
- Terminal 5 – Right Trailer Park Lamps Control
- Terminal 6 – Trailer Stop Lamps Control
- Terminal 7 – Left Trailer Park Lamps Control
- Terminal 8 – Trailer Backup Lamp Control
- Terminal 9 – B+
- Terminal 10 – Ignition Voltage
- Terminal 11 – Ground
- Terminal 12 – Trailer Connected Signal
- Terminal 13 – Ground

### Connecting Aftermarket Accessories

- Some aftermarket accessories that connect to the X88 Tow Vehicle Electrical Receptacle will be recognized by the vehicle as a trailer connected, even if the accessory is not a trailer. As a result, side blind zone detection, rear park assist, and/or rear cross traffic alert will be turned off anytime the vehicle detects a trailer/accessory is connected.
- Vehicles equipped with U1D/UET have trailer theft detection that constantly monitors trailer connected status when enabled. This is done by randomly pulsing the lighting circuits of the trailer when the vehicle is parked. As a result, some aftermarket accessories may be turned ON/OFF when connected to the vehicle with theft detection enabled.
- Vehicles equipped with U1D/UET use pulse width modulation voltage (PWM) for trailer lighting functions. Some aftermarket accessories are incompatible with PWM and may not function correctly when connected to the trailer lighting circuits of the vehicle.

### Trailer Battery Charging System

Trailer battery charging is accomplished through constant battery voltage from the X50A Engine Wiring Harness Junction Block to the X88 Tow Vehicle Electrical Receptacle. Battery voltage is supplied to terminal E at the X88 Tow Vehicle Electrical Receptacle at all times. If equipped, the trailer battery will constantly be charged by the vehicle’s electrical system anytime the trailer is connected. Some trailers require the B+ circuit to the X88 Tow Vehicle Electrical Receptacle for the trailer brakes to function.

### Trailer Lighting and Detection With U1D/UET

**Note:**

- Some trailers utilize a trailer mounted control module to operate some or all of the trailer lights. These trailers may use the B+ circuit from the trailer connector to power the trailer lighting circuits. These trailers may not always be detected by the Trailer Lighting Control Module and may set faults.

- Vehicles equipped with IOR/1FL do not come equipped with the trailering APP however may still be equipped with a K68 trailer Lamp Control Module.

**North America (7-Terminal connector)**
North American vehicles use a 7-way trailer connector for trailering features. The K68 Trailer Lamp Control Module is responsible for controlling the trailer lighting on vehicles with U1D/UET. The combined trailer stop/turn signal lamps of the trailer must draw at least 55mA of total current to be detected as a trailer or the Trailer Lamp Control Module will not control the lighting circuits. The Trailer Lamp Control Module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The Trailer Lamp Control Module responds by applying pulse width modulated voltage (PWM) to the appropriate control circuits for the requested lamps illuminating the lamps on the attached trailer. The Trailer Lamp Control Module constantly monitors for trailer connection status, trailer lighting faults, and trailer theft deterrent purposes. This is accomplished through the lighting circuits of the trailer to determine if a trailer is connected. When a trailer is connected, the Trailer Lamp Control Module senses the trailer connection and alerts the driver by requesting a trailer profile setup through the Trailering App, which is displayed on the infotainment screen. If a trailer is disconnected with the ignition ON, the vehicle will display multiple trailer lighting messages until a trailer is reconnected or the message is dismissed by the user. With the key OFF, the Trailer Lamp Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. The lights on the trailer may flash at different intervals with the key OFF depending on which type of lights the trailer is built with. If a trailer is disconnected with the key ON, the vehicle will display a trailer disconnected message until a trailer is reconnected or the ignition is cycled.

**Export (13-Terminal connector)**
Export vehicles use a 13-way trailer connector for trailering features. The K68 Trailer Lamp Control Module is responsible for controlling the trailer lighting on vehicles with U1D/UET. The combined trailer turn signal and park lamps of the trailer must draw at least 55mA of total current to be detected as a trailer or the Trailer Lamp Control Module will not control the lighting circuits. The Trailer Lamp Control Module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The Trailer Lamp Control Module responds by applying pulse width modulated voltage (PWM) to the appropriate control circuits for the requested lamps illuminating the lamps on the attached trailer. The Trailer Lamp Control Module constantly monitors for trailer connection status, trailer lighting faults, and trailer theft deterrent purposes. This is accomplished through the lighting circuits of the trailer to determine if a trailer is connected. With the key OFF, the Trailer Lamp Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. The lights on the trailer may flash at different intervals with the key OFF depending on which type of lights the trailer is built with.

## Trailer Lighting Without U1D/UET

The K219 Lighting Control Module is responsible for controlling the trailer lighting on vehicles without U1D/UET. The lighting control module receives serial data messages from the K9 Body Control Module (BCM) indicating what lamps have been activated on the vehicle. The lighting control module responds by applying voltage to the appropriate relay control circuits for the requested lamps anytime the vehicle lamps are commanded ON. With the relay coil energized, the relay contacts close and allow voltage to flow through the relay illuminating the appropriate lamps on the attached trailer.

## North America 7–Way Trailer Connector Trailer Messages

The driver information center (P16 Instrument Cluster) or infotainment screen (P17 Info Display Module) may display one or more of the following messages to the user related to trailering.

**North America 7–Way Trailer Connector**

| Trailering Message | Description |
|---|---|
| Check Trailer Left Turn Signal Lamp | The K68 Trailer Lighting Control Module detects a fault on the left trailer stop/turn lamp control circuit |
| Check Trailer Right Turn Signal Lamp | The K68 Trailer Lighting Control Module detects a fault on the right trailer stop/turn lamp control circuit |
| Check Trailer Rear Lamp | The K68 Trailer Lighting Control Module detects a fault on the trailer park lamp control circuit. |

| Trailering Message | Description |
|---|---|
| Check Trailer Reversing Lamp | The K68 Trailer Lighting Control Module detects a fault on the trailer backup lamp control circuit. |
| Check Trailer Brake Lamps | The K68 Trailer Lighting Control Module detects a fault on the left and/or right trailer stop/turn lamp control circuits |
| {JL1} Check Trailer Wiring | The K67 Trailer Brake Control Module detects a fault on the trailer brake control circuit or the trailer was disconnected. |
| Lane Change Alert Off | Reminder to the user that lane change alerts are turned off anytime a trailer is detected. |
| Rear Cross Traffic Alert Off | Reminder to the user that rear cross traffic alerts are turned off anytime a trailer is detected. |
| Rear Park Assist Off | Reminder to the user that rear park assist is turned off anytime a trailer is detected. |
| Remember to turn On Tow/Haul Mode | Reminder to the user to turn ON Tow/Haul Mode when towing. |
| {JL1} Service Trailer Brake System | The K67 Trailer Brake Control Module detects a fault on the trailer brake control circuit. |
| Service Trailer Tire Monitor System | The K214 Trailer Tire Pressure Indicator Module detects one or more issues with the trailer tire pressure monitoring system. |
| Trailer Detected | The K68 Trailer Lighting Control Module detects a trailer has been connected to the X88 Trailer Connector. |
| {JL1} Trailer Brakes Detected | The K67 Trailer Brake Control Module detects a trailer with trailer brakes has been connected to the X88 Trailer Connector. |
| Trailer Disconnected Check Connection | The K68 Trailer Lighting Control Module detects a trailer has been disconnected from the X88 Trailer Connector. |
| Trailer Tire Pressure High | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressures is high. |
| Trailer Tire Pressure Low | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressures is low. |
| Trailer Tire Sensor Fault | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire pressure sensors has a fault. |
| Trailer Tire Temperature High | The K214 Trailer Tire Pressure Indicator Module detects one or more of the trailer tire temperatures is too high. |

## Export 13–Way Trailer Connector Trailer Messages

The driver information center (P16 Instrument Cluster) or infotainment screen (P17 Info Display Module) may display one or more of the following messages to the user related to trailering.

### Export 13–Way Trailer Connector

| Trailering Message | Description |
|---|---|
| Check Trailer Left Turn Signal Lamp | The K68 Trailer Lighting Control Module detects a fault on the left trailer turn lamp control circuit |
| Check Trailer Right Turn Signal Lamp | The K68 Trailer Lighting Control Module detects a fault on the right trailer turn lamp control circuit |
| Check Trailer Rear Lamp | The K68 Trailer Lighting Control Module detects a fault on one or both of the trailer park lamp control circuit(s). |
| Check Trailer Reversing Lamp | The K68 Trailer Lighting Control Module detects a fault on the trailer backup lamp control circuit. |
| Check Trailer Brake Lamps | The K68 Trailer Lighting Control Module detects a fault on the trailer stop lamp control circuit. |
| Check Trailer Rear Fog Lamp | The K68 Trailer Lighting Control Module detects a fault on the trailer fog lamp control circuit. |

| Trailering Message | Description |
|---|---|
| Lane Change Alert Off | Reminder to the user that lane change alerts are turned off anytime a trailer is detected. |
| Rear Cross Traffic Alert Off | Reminder to the user that rear cross traffic alerts are turned off anytime a trailer is detected. |
| Rear Park Assist Off | Reminder to the user that rear park assist is turned off anytime a trailer is detected. |

## Trailer Theft Detection (With U1D/UET Only)

Trailer theft monitoring can be turned ON and OFF through the vehicle Trailer App. When enabled, any time the trailer theft deterrent system is armed, the trailer lighting circuits are constantly monitored to determine if a trailer is connected for trailer theft deterrent purposes. With the key OFF, the K68 Trailer Lamp Control Module will randomly pulse the lighting circuits of the trailer to verify it is still connected by monitoring the voltage drop of the circuit. Depending on the configuration of the trailer lights, the trailer lights may randomly flash as part of the trailer theft deterrent function. These flashes correspond to when the K68 Trailer Lamp Control Module pulses the lighting circuits to ensure the trailer is still connected and is considered normal. If the trailer is disconnected while the trailer theft deterrent system is armed, the vehicle will flash the exterior lights and cycle the horn to alert of a trailer theft event. Refer to *Theft Systems Description and Operation 11-90* for more information on the content theft deterrent system.

## Trailer Brakes (JL1)

**The vehicle is equipped with the following trailer braking components:**

- K160 Brake System Control Module
- K67 Trailer Brake Control Module
- S76 Trailer Brake Control Switch
- Trailer Brake Driver Information Center Display

**Trailer Brake Circuits**

- Circuit 2223 is the trailer brake apply signal circuit. The K160 Brake System Control Module receives vehicle braking force data and/or data from the application of the manual trailer brake slide lever. The brake system control module responds by applying the appropriate amount of pulse width modulated (PWM) voltage based on the amount of trailer brake application desired. The K67 Trailer Brake Control Module responds to the signal circuit by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit 47.
- Circuit 2224 is the trailer brake enable signal circuit. The K160 Brake System Control Module applies voltage to the enable circuit anytime a LIN data communication fault is not present, a trailer is connected, and the vehicle brakes are being applied. The enable circuit must have voltage applied to it before the K67 Trailer Brake Control Module applies the appropriate amount of pulse width modulated (PWM) voltage to the trailer auxiliary control circuit 47.
- Circuit 2733 is the brake system control module LIN bus 2 circuit. The K160 Brake System Control Module, K67 Trailer Brake Control Module, and the S76 Trailer Brake Control Switch all communicate through the brake system control module LIN bus 2 circuit. If the LIN bus has a fault on the circuit, trailer braking will be disabled until the fault is repaired.
- Circuit 47 is the trailer auxiliary control circuit. The K67 Trailer Brake Control Module responds to signal circuit 2223 and enable circuit 2224 by applying the appropriate amount of PWM voltage to the trailer auxiliary control circuit. A properly functioning trailer will apply the appropriate amount of braking force to the brakes of the trailer.

**The Trailer Brake Control System is compatible with two types of Trailer Brake Systems as listed below:**

1. **Electric Brakes** A controlled electrical output signal energizes an electric-magnet/lever arm assembly that directly actuates the brake mechanism. The GDS name for this system is “Electromagnetic Brakes”.
2. **Electric Over Hydraulic Brakes** A controlled electrical output signal energizes a remote, trailer mounted hydraulic pump to build brake pressure in a closed hydraulic system on the trailer. The hydraulic fluid pressure actuates the brake mechanism. The GDS name for this system is “Electrohydraulic Brakes”.

**Trailer Brake Output Versus Trailer Brake Type**

- The trailer brake system characterizes the trailer brakes as either Electric Brake or Electric Over Hydraulic Brake automatically. This characterization may be affected by the number, type, and age of the trailer brake magnets, as well as any other devices installed on the trailer brakes (i.e. adapters for Electric Over Hydraulic brake functionality).

- The trailer brake system is fully operational with either characterization.
- Sliding the manual trailer brake apply lever will produce output at zero speed for either characterization.

The user gain allows the driver to adjust the amount of trailer brake output to match the trailer load and road surface. The controller determines the desired trailer brake output and provides a control signal to the K67 Trailer Brake Control Module (TBPM). The K67 Trailer Brake Control Module amplifies the signal and provides the output required to activate the Electric or Electric Over Hydraulic trailer brakes.

The trailer brake control can support up to a maximum of four axles with electric trailer brakes (8 brake magnets).

Connecting a trailer that is not compatible with the trailer brake system may result in reduced or complete loss of trailer braking. There may be an increase in stopping distance or trailer instability which could result in personal injury or damage to the vehicle, trailer or other property. An aftermarket controller may be available for use with incompatible trailer brake systems.

To determine the type of brakes on your trailer and the availability of controllers, check with your trailer manufacturer or dealer. Do not power up an aftermarket controller with the factory brake controller at the same time.

### Trailer Brake Control Panel

The S76 Trailer Brake Control Switch contains the trailer gain and manual apply switches. It is located in the vehicle center stack. Refer to the owner's manual for more information on the location. The control panel and switches allows you to adjust the amount of output, referred to as trailer gain, available to the Electric or Electric Over Hydraulic brakes. It also allows you to manually apply the trailer brakes. The trailer brake control switch is used along with the trailer brake display page on the driver information center to adjust and display power output to the trailer brakes.

### Manual Trailer Brake Apply

The manual trailer brake apply lever is located on the S76 Trailer Brake Control Switch and is used to apply the trailer's Electric or Electric Over Hydraulic brakes independent of the vehicle's brakes. This lever is used in the trailer gain adjustment procedure to properly adjust the power output to the trailer brakes.

Sliding the lever will apply only the trailer brakes. The power output to the trailer is indicated in the trailer brake display page in the Driver Information Center (DIC). If the vehicle's service brakes are applied while using the manual trailer brake apply lever, the trailer brake control output power will be the greater of the two.

The trailer and the vehicle's brake lamps will come on when either the vehicle's braking or manual trailer brakes are applied.

### Trailer Brake Gain Adjustment

Trailer gain should be set for a specific trailering condition and must be adjusted any time vehicle loading, trailer loading or road surface conditions change. It is important to re-adjust trailer gain any time the tow vehicle, trailer loading or road surface conditions change or if you notice trailer wheel lock-up at any time while you are towing.

Setting the trailer gain properly is needed for the best trailer stopping performance. A trailer that is over-gained may result in locked trailer brakes. A trailer that is under-gained may result in not enough trailer braking. Both of these conditions may result in poor stopping and stability of the vehicle and trailer.

#### Trailer Gain Adjustment Procedure

- Adjust trailer gain in 0.5 step increments up to 10 gain setting by using the gain adjustment +/− buttons on the trailer brake control panel switch. Pressing and holding a gain button will cause the trailer gain to continuously increment or decrement. To turn the output to the trailer off, set the gain to zero.
- Drive the tow vehicle and trailer combination on a level surface representative of the towing condition and free of traffic at approximately 32–40 km/h (20–25 mph) and fully apply the manual trailer brake apply lever mechanism located on the trailer brake control panel switch. Adjusting the trailer gain at slower speeds may result in an incorrect gain setting.
- Adjust the trailer gain to just below the threshold of trailer wheel lock-up . Trailer wheel lock-up may not occur if towing a heavily loaded trailer. In this case, adjust the trailer gain to the highest allowable setting for the towing condition.

**Trailer Brake Gain and Output Display**
This display menu can be accessed by scrolling through the DIC menu, or any time the trailer gain +/− button is depressed, or the manual trailer brake apply lever is actuated. The trailer output is displayed from 0 to full output and indicates the output power provided to the trailer brakes, relative to the gain setting.

After the electrical connection is made to a trailer equipped with electric brakes or electric over hydraulic brakes, the TRAILER CONNECTED message will be displayed momentarily on the DIC. The Trailer Brake Display Page can be selected on the DIC showing TRAILER GAIN and OUTPUT, after all vehicle related service messages are acknowledged by the driver. Depending on which instrument panel cluster is in the vehicle, the DIC may display dashed lines, a greyed out display, or it may be blank signifying a disconnected trailer or a trailer brake fault condition.

## Tow/Haul Mode

Tow/Haul mode is selected through the Ride Control Switch for hauling heavy loads to provide increased performance and vehicle control. Tow/Haul Mode adjusts the transmission shift pattern, steering, and Electronic Stability Contol (ESC) performance.

If the vehicle is turned off with Tow/Haul mode active and then restarted within four hours or less Tow/Haul will remain active. Otherwise, the vehicle will start in Normal mode.

If equipped with a diesel engine, exhaust braking is automatically activated when Tow/Haul mode is selected. The system will command down shifts to reduce vehicle speed when the brake is applied. The normal tow/haul shift pattern will return once the vehicle is on a low grade or when the accelerator pedal is pressed.

## Trailer Brake Driver Information Center Indicators and Messages

**Trailer Brake Detection**
The K67 Trailer Brake Control Module constantly monitors the trailer auxiliary control circuit from Terminal C at the X88 Trailer connector. When a trailer is connected with trailer brakes, the K67 Trailer Brake Control Module senses the connection and alerts the driver with a Trailer Connected message. If the K67 Trailer Brake Control Module senses a fault, or the trailer becomes disconnected, the vehicle will alert the driver with a Check Trailer Wiring message.

The following indicators are used to inform the driver of several different conditions:

**Trailer Connected**
This message will be briefly displayed when a trailer with Electric or Electric Over Hydraulic brakes is first connected to the vehicle. This message will automatically turn off in about ten seconds. The driver can also acknowledge this message before it automatically turns off.

**Check Trailer Wiring**
This message will be displayed if:

- The system detects that a trailer with Electric or Electric Over Hydraulic brakes is connected to the vehicle and then the trailer harness becomes disconnected from the vehicle.
- The trailer connection is recognized initially and then a disconnect occurs while the vehicle is stationary. This message will automatically turn off in about thirty seconds. This message will also turn off if the driver selects to turn this message off or if the trailer harness is reconnected.
- A disconnect of the trailer wiring harness occurs while the vehicle is moving. The Check Trailer Wiring message will continue until the ignition is turned off. The message will also turn off if the driver selects to turn this message off or it the trailer harness is re-connected.
- There is an electrical fault in the wiring to the electric trailer brakes. The Check Trailer Wiring message will continue as long as there is an electrical fault in the trailer wiring. This message will also turn off if the driver acknowledges this message off.
- A poor connection at the 7–way connector may cause the Check Trailer Wiring message. Some aftermarket 7–way trailer side connector adapters or plugs may cause deformation or excessive wear to the vehicle’s trailer terminals. It is recommended that you use an OEM or Pollak heavy duty 7–way trailer side connector adapter.

**Service Trailer Brake System**
This message will be displayed when there is a problem with the trailer brake control system. The trailer brake system may not be fully functional, or may not be functioning at all. The trailer brake system is designed to provide trailer braking, if possible, even when faults prevent it from being fully functional. This reduced functionality includes:

1. Providing trailer braking when the master cylinder pressure or brake pedal switch are faulted.
2. Providing trailer braking when hill start assist and trailer sway control communication is faulted.
3. Providing trailer braking when certain manual trailer brake apply lever faults are present.

## Trailer Tire Pressure Monitoring

### Special Tools

- *EL-46079/J-46079*
  Tire Pressure Monitor Diagnostic Tool
- *EL-50448*
  Tire Pressure Monitor Sensor Activation Tool
- *EL-52641* Trailer Presence Simulator Tool

For equivalent regional tools, refer to [Link target (target-id 59410-) not found] .

The Trailer Tire Pressure Monitor System is designed to monitor the pressure of the trailer tires, and warn the driver when a low pressure condition exists. Four Trailer Tire Pressure Monitor System sensors may be provided in the vehicle's glove box as an accessory when equipped. The system can accommodate a trailer with up to (6) tires if additional sensors are purchased from the dealership. Also, the system can be paired with up to (5) individual trailers. The sensors must be mounted onto each tire and wheel assembly, and the sensors must be learned by the vehicle by following the learning procedure as shown in the Trailering App section of this manual. For sensor installation assistance, please contact your trailer service center or tire service center. The Trailer Tire Pressure Monitor System sensors monitor the air pressure in the trailer tires and transmit the trailer tire pressure readings to a receiver located in the vehicle. The trailer tire pressure sensors can transmit up to 23 feet (7 meters) from the hitch receiver of the vehicle. The tire pressure values can be viewed in the trailering app in the vehicle's center stack.

## Trailering Diagnostic Tools

In some situations when diagnosing trailer tire pressure monitoring, trailer lighting, or integrated trailer brakes, it may be necessary to connect the vehicle to a trailer to confirm proper operation. Performing this activity may prove difficult in the service environment since trailers are not often available for diagnostic use, may have existing electrical issues outside of the issues a technician is attempting to diagnose, or simply may be too unwieldily to connect for diagnosis.

With all this in mind, it may be helpful to build or create a tool that can be plugged into the vehicle's trailer connector and simulate a connected trailer. This tool would include park lamps, stop lamps, and a reverse lamp for lighting and trailer tire pressure monitoring diagnosis. It can be expanded to include trailer brake magnets to diagnose integrated trailer brake concerns. Also, an additional lamp can be included to diagnose the B+ circuit to the trailer.

Trailer issues are NOT covered under warranty, but these tools may be used to verify the vehicle is functioning properly and to help the customer understand and correct any trailer related issues if they so choose.

## Available Trailer Presence Simulator Tool

| Illustration | Tool Number/Description |
|---|---|
| 5166189 | *EL-52641*<br>Trailer Presence Simulator Tool |

## Simulated Trailer Lighting

Creating a tool to simulate a connected trailer can be used to diagnose issues with trailer lighting, trailer brake (if equipped), the Trailering App (if equipped), and trailer tire pressure monitoring system (if equipped).

If the vehicle is equipped with a K68 Trailer Lamp Control Module (U1D/UET), the module monitors the current on the lighting circuits to determine a trailer has been connected. The Trailer Lamp Control Module pulses current on the trailer lighting circuits every 42 minutes to monitor for a connected trailer. If a current draw greater than 55mA is detected, the Trailer Lamp Control Module recognizes this as a connected trailer. This will enable any trailer lighting controlled by the Trailer Lamp Control Module. The Center Stack Module will also use this trailer detection as a cue to enable the Trailering App and trailer tire pressure monitoring functions.

### Creating a Simulated Trailer Lighting Tool

Parts needed:

- 7-way RV trailer connector Qty: 1

**Note:** The combination trailer stop/turn, and backup lamps must draw at least 55mA of total current to be detected as a trailer. Some LED combination lamps will not draw enough current. If an LED combination lamp is used, make sure it draws at least 55mA. A load resistor can be added to the circuit if necessary to obtain the correct load.

- Combination trailer park/stop/turn lamp (greater than 55mA drawn when on) Qty: 2
- Reverse lamp Qty: 1

- 12 gauge wire and terminals/connectors Qty: As needed
- 18 gauge wire and terminals/connectors Qty: As needed
- Mounting board Qty: 1

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector and the ground circuit of each combination trailer park/stop/turn lamp and the reverse lamp in parallel.
2. Connect an 18 gauge wire between the park lamp terminal of the 7-way trailer connector and the park lamp circuit of each combination trailer park/stop/turn lamp in parallel.
3. Connect an 18 gauge wire between the left turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of left trailer park/stop/turn lamp.
4. Connect an 18 gauge wire between the right turn/stop lamp terminal of the 7-way trailer connector and the turn/stop lamp circuit of right trailer park/stop/turn lamp.
5. Connect an 18 gauge wire between the reverse lamp terminal of the 7-way trailer connector and the reverse lamp.

**Note:** A combination trailer lighting and trailer brake tool can be created on the same mounting board.

6. Mount the left combination trailer park/stop/turn lamp, right combination trailer park/stop/turn lamp, and reverse lamp to the mounting board.
7. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

## Simulated Trailer Brakes

Creating a tool to simulate trailer brakes can be used to diagnose trailer brake issues.

The trailer brake control system is compatible with two types of trailer brake systems: electromagnetic or electro-over hydraulic trailer brakes. The Brake System Control Module must determine which type of brakes the trailer is equipped with so the system can output correctly for the trailer's brake system. Because the Brake System Control Module has to determine the type of trailer brake system that is being used, it can be sensitive to a variety of trailer wiring issues.

The Trailer Brake Control Module continuously sends a test pulse out on the trailer brake control circuit (circuit 47) to determine if a trailer with trailer brakes has been connected. How the pulse reacts when a trailer is connected is how the Trailer Brake Control Module determines which type of braking system the trailer is equipped with.

Even after the system detects the trailer, Trailer Brake Control Module will continue to send this test pulse on the trailer brake control circuit, which now is monitoring both the truck and trailer circuitry. The trailer brake control circuit continues to be monitored for any faults so the driver can be notified of any issues that may occur within the truck or trailer, as well as, to determine when the trailer is disconnected from the truck.

**Creating a Simulated Trailer Brake Tool**
Parts needed:

- 7-way RV trailer connector Qty: 1
- Electric trailer brake magnets Qty: 2, 4, 6, or 8
- Reverse lamp Qty: 1
- Mounting board Qty: 1
- 12 gauge wire and terminals/connectors Qty: As needed

1. Connect a 12 gauge wire to the ground terminal of the 7-way trailer connector.
2. Connect a 12 gauge wire to the brake controller output terminal of the 7-way trailer connector.

**Note:** The trailer brake magnets must be connected in parallel. Connecting in series will create an excessive current draw and disable the trailer brake system.

3. Connect the trailer brake magnets to the 12 gauge wires from the 7-way trailer connector in parallel.

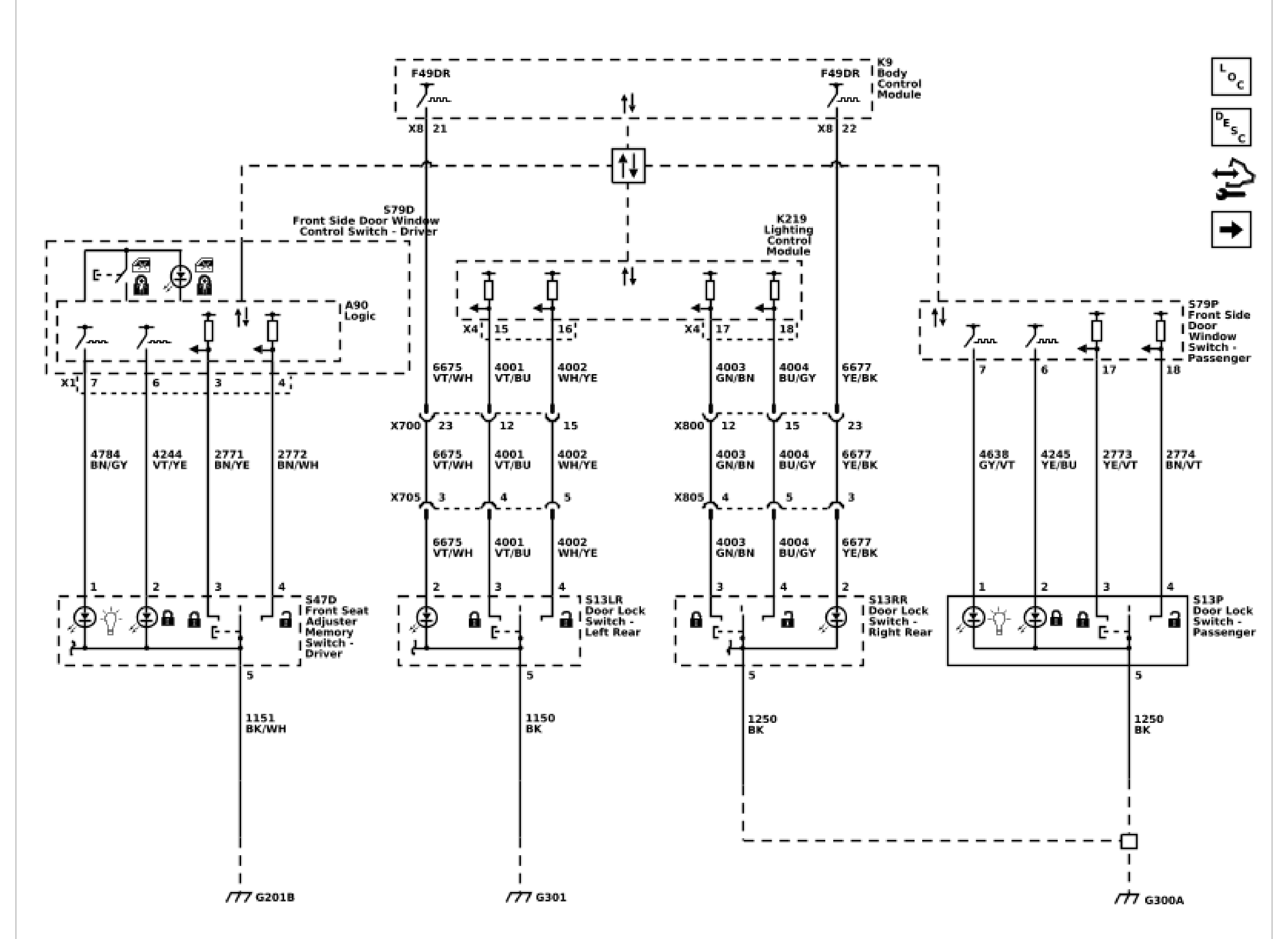
**Note:** A combination trailer lighting and trailer brake tool can be created on the same mounting board.

4. Mount the trailer brake magnets to the mounting board.
5. Plug the 7-way RV trailer connector to the vehicle and verify functionality.

# Vehicle Access

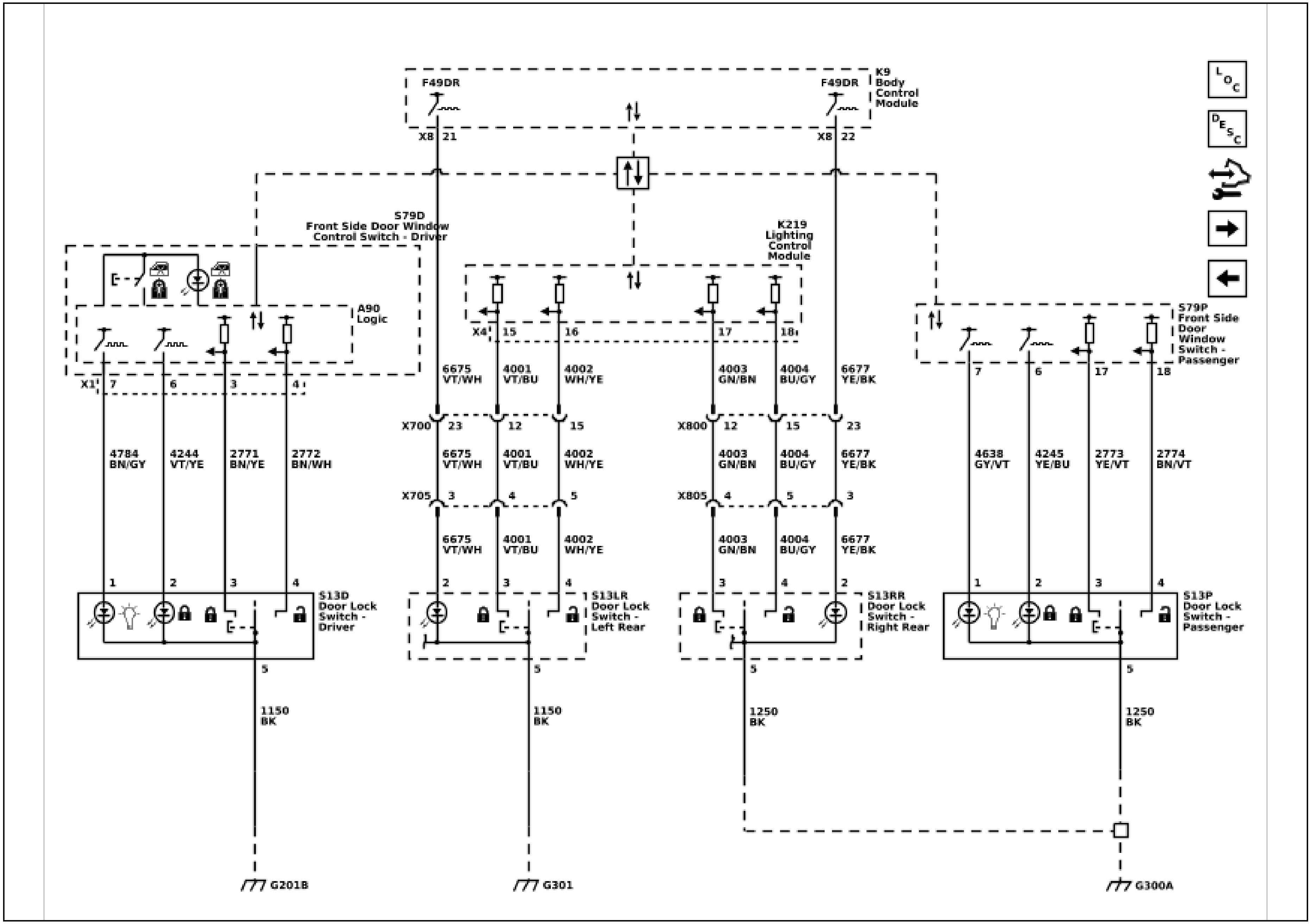
## Schematic and Routing Diagrams

## Door Lock/Indicator Schematics (Door Lock Switches and Indicators (A45 / AUN))


K9 Body Control Module
F49DR
X8 21
F49DR
X8 22
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X1 7
6
3
4
K219 Lighting Control Module
X4 15
16
X4 17
18
S79P Front Side Door Window Switch - Passenger
7
6
17
18
6675 VT/WH
4001 VT/BU
4002 WH/YE
4003 GN/BN
4004 BU/GY
6677 YE/BK
X700 23
12
15
X800 12
15
23
4784 BN/GY
4244 VT/YE
2771 BN/YE
2772 BN/WH
4638 GY/VT
4245 YE/BU
2773 YE/VT
2774 BN/VT
X705 3
4
5
X805 4
5
3
S47D Front Seat Adjuster Memory Switch - Driver
S13LR Door Lock Switch - Left Rear
S13RR Door Lock Switch - Right Rear
S13P Door Lock Switch - Passenger
1151 BK/WH
1150 BK
1250 BK
G201B
G301
G300A

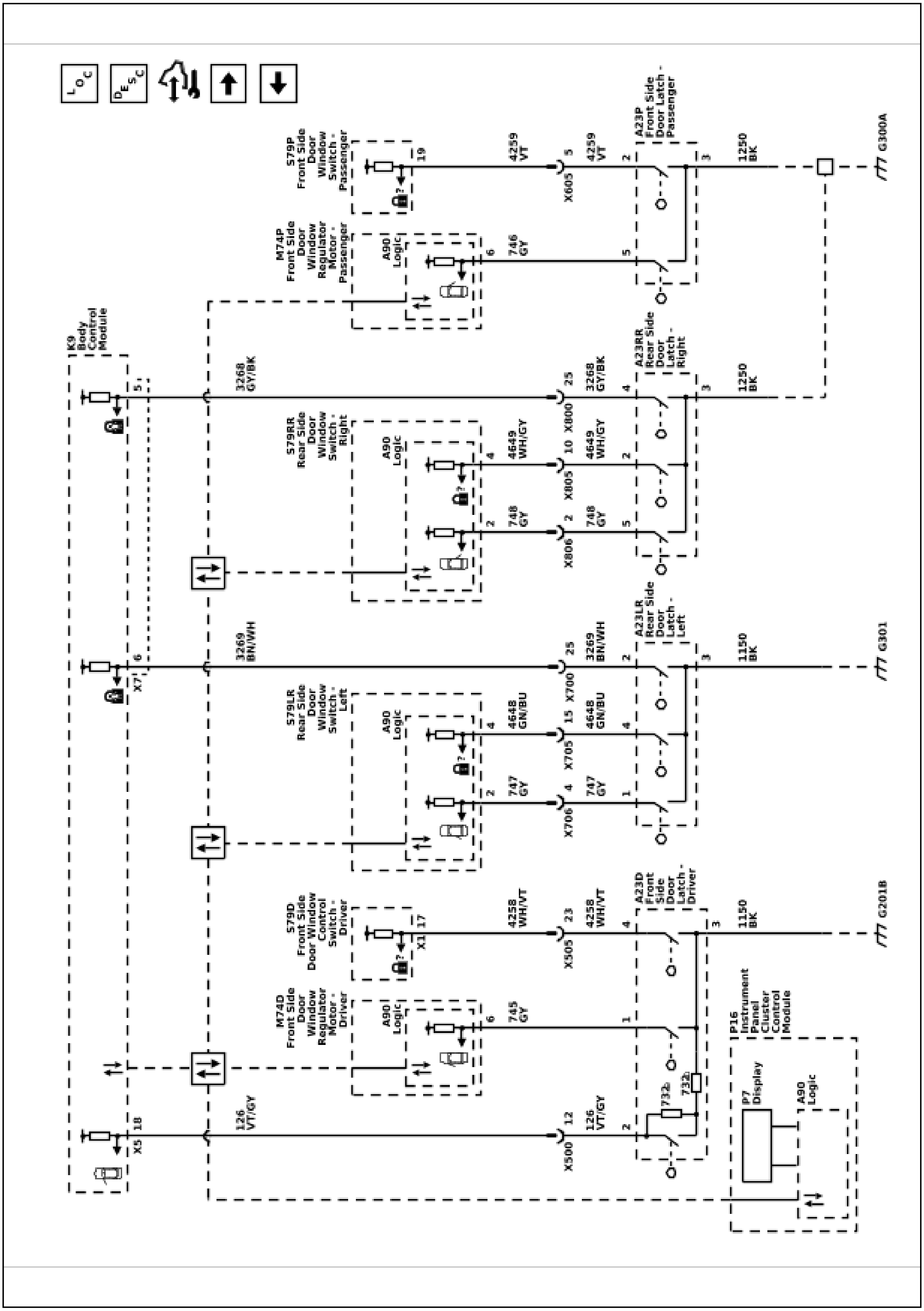
6885471

## Door Lock/Indicator Schematics (Door Lock Switches and Indicators (- (A45 & AUN)))

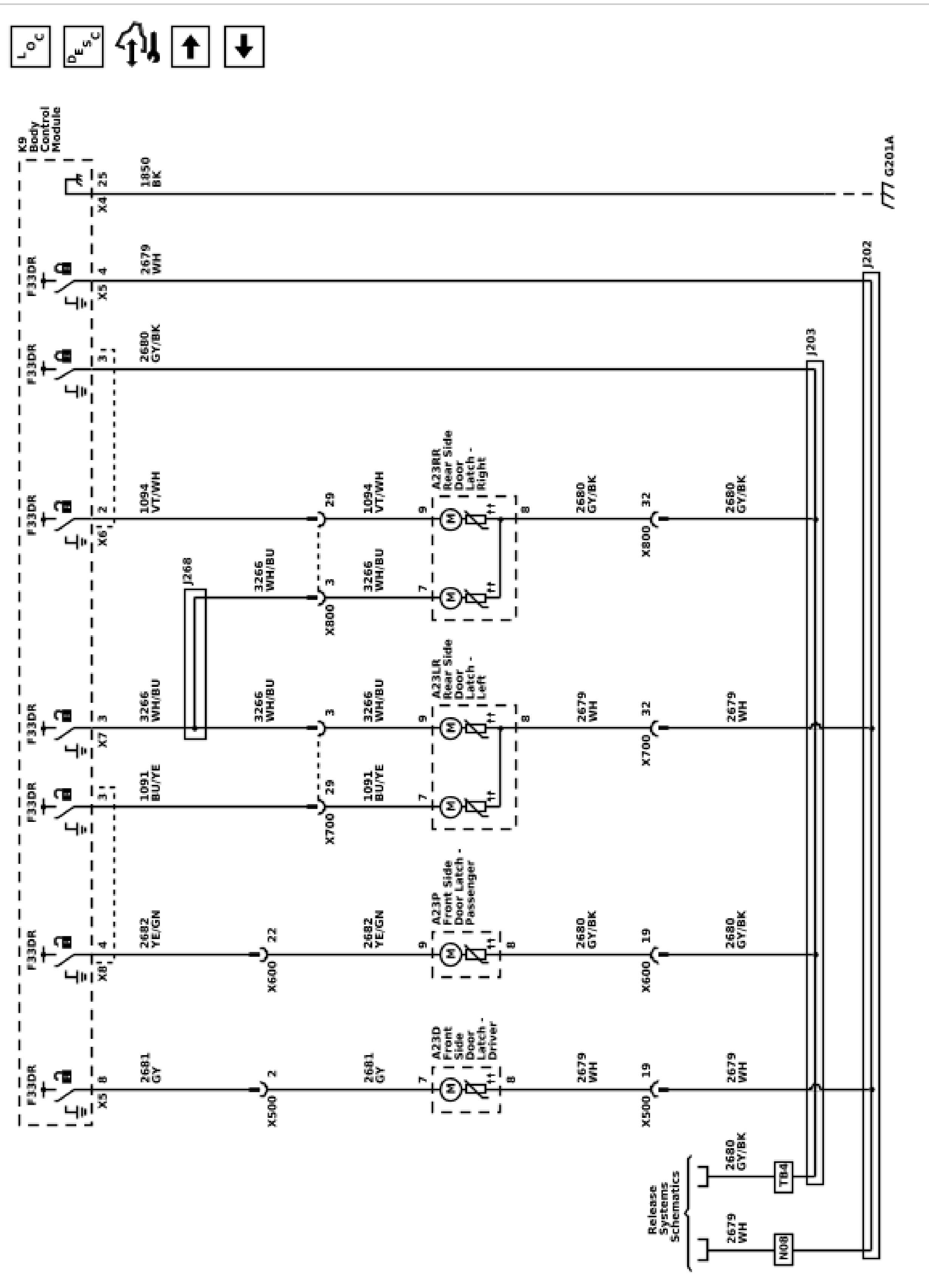

K9 Body Control Module
F49DR
X8 21
F49DR
X8 22
S79D Front Side Door Window Control Switch - Driver
A90 Logic
X1 7 6 3 4
K219 Lighting Control Module
X4 15 16 17 18
S79P Front Side Door Window Switch - Passenger
7 6 17 18
6675 VT/WH
4001 VT/BU
4002 WH/YE
4003 GN/BN
4004 BU/GY
6677 YE/BK
X700 23 12 15
X800 12 15 23
X705 3 4 5
X805 4 5 3
4784 BN/GY
4244 VT/YE
2771 BN/YE
2772 BN/WH
4638 GY/VT
4245 YE/BU
2773 YE/VT
2774 BN/VT
1 2 3 4
S13D Door Lock Switch - Driver
2 3 4
S13LR Door Lock Switch - Left Rear
3 4 2
S13RR Door Lock Switch - Right Rear
1 2 3 4
S13P Door Lock Switch - Passenger
5
1150 BK
1150 BK
1250 BK
1250 BK
G201B
G301
G300A
L O C
D E S C

6885472

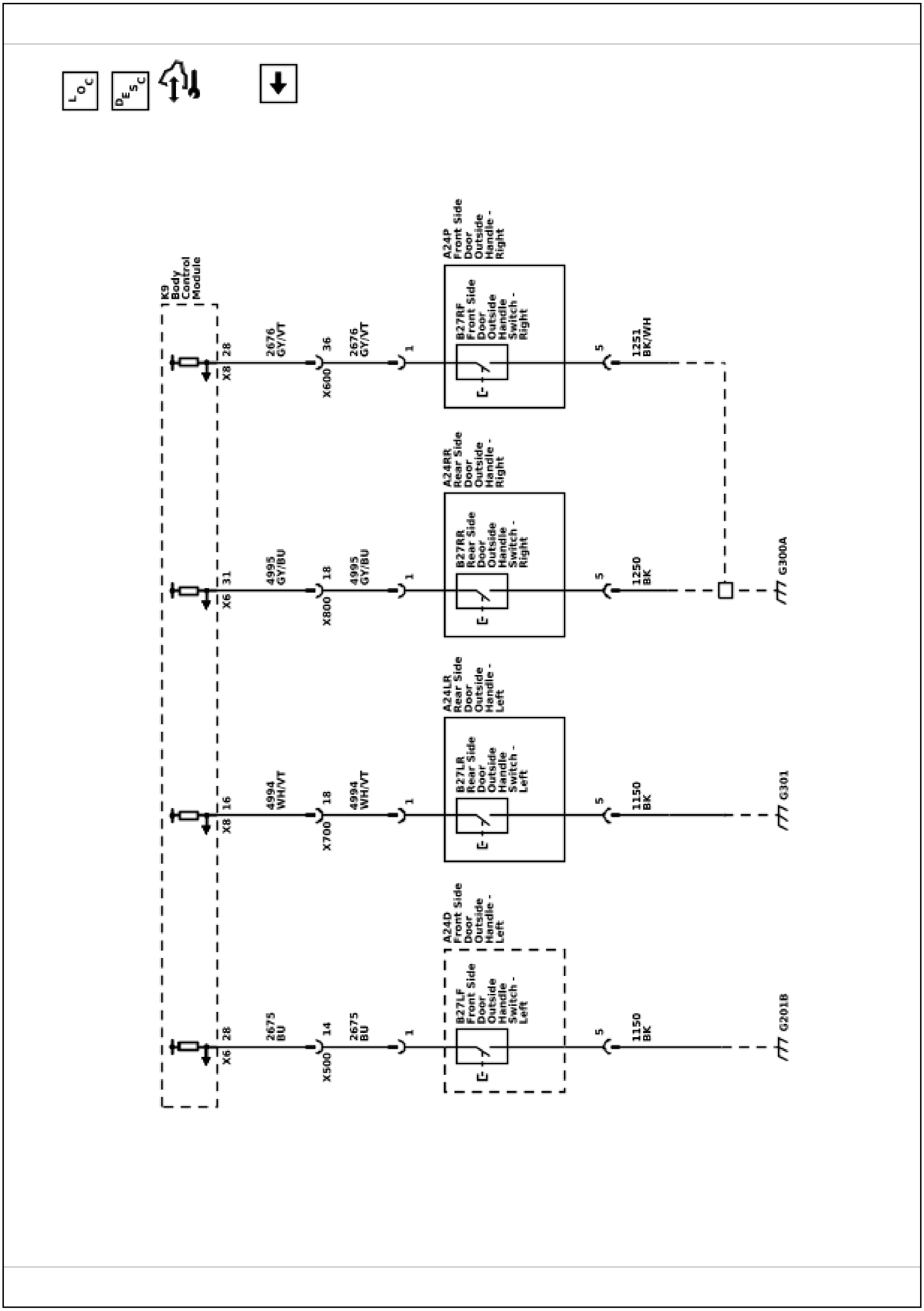
## Door Lock/Indicator Schematics (Ajar Switches and Lock Indicators)


6885473
K9 Body Control Module
X5 18
X7 6
5
126 VT/GY
3269 BN/WH
3268 GY/BK
M74D Front Side Door Window Regulator Motor - Driver
A90 Logic
6
745 GY
S79D Front Side Door Window Control Switch - Driver
X1 17
4258 WH/VT
S79LR Rear Side Door Window Switch - Left
4
2
4648 GN/BU
747 GY
S79RR Rear Side Door Window Switch - Right
4649 WH/GY
748 GY
M74P Front Side Door Window Regulator Motor - Passenger
746 GY
S79P Front Side Door Window Switch - Passenger
19
4259 VT
X500 12
X505 23
X706 4
X705 15
X700 25
X806 2
X805 10
X800 25
X605 5
A23D Front Side Door Latch - Driver
1
2
3
732
A23LR Rear Side Door Latch - Left
A23RR Rear Side Door Latch - Right
A23P Front Side Door Latch - Passenger
1150 BK
1250 BK
G201B
G301
G300A
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic

## Door Lock/Indicator Schematics (Actuators)

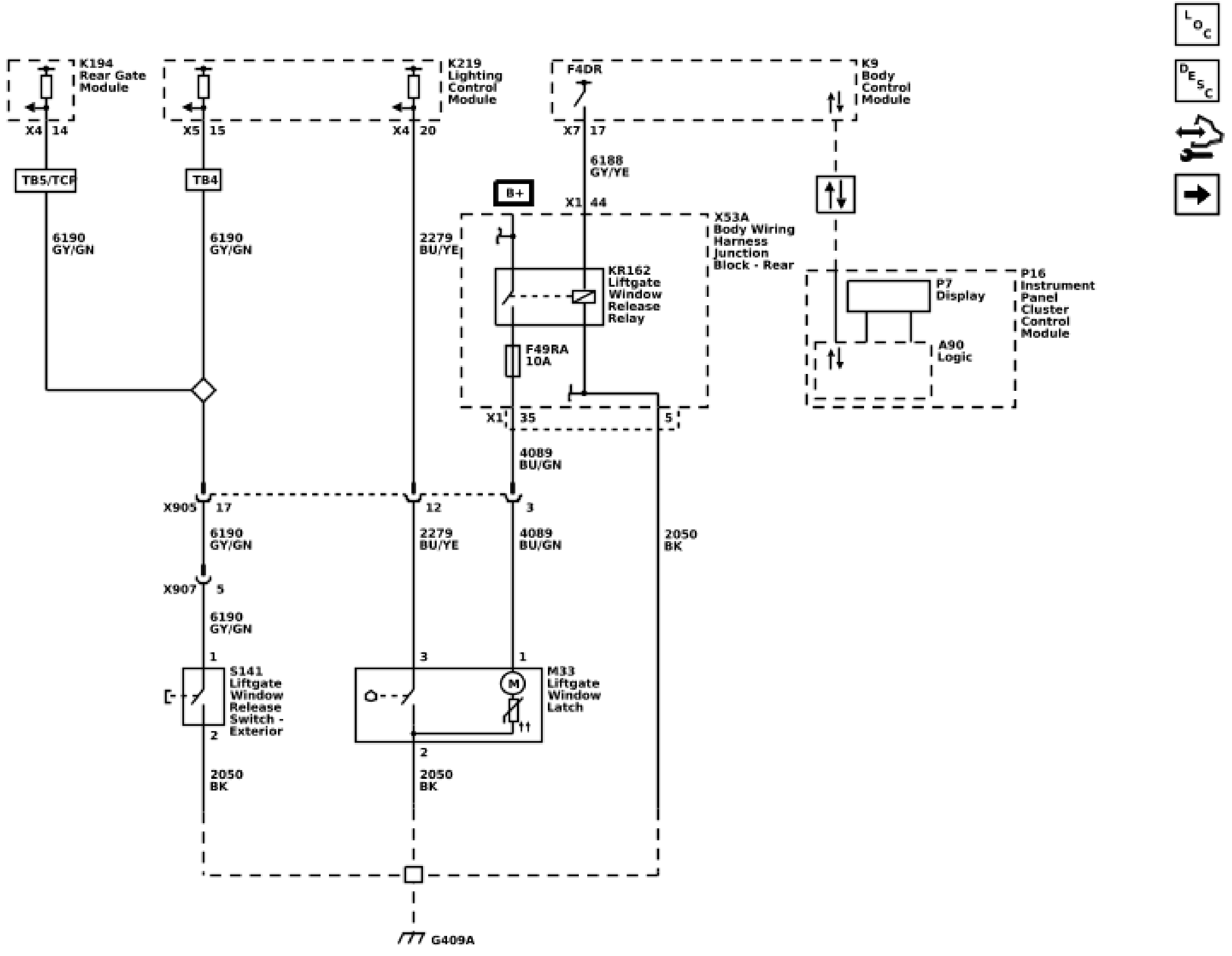

6885474
K9 Body Control Module
F33DR
X5 8
X8 4
X7 3
X6 2
X5 4
X4 25
3
2681 GY
2682 YE/GN
1091 BU/YE
3266 WH/BU
1094 VT/WH
2680 GY/BK
2679 WH
1850 BK
J268
J203
J202
G201A
X500 2
X600 22
X700 29
X700 3
X800 3
X800 29
A23D Front Side Door Latch - Driver
A23P Front Side Door Latch - Passenger
A23LR Rear Side Door Latch - Left
A23RR Rear Side Door Latch - Right
7
9
8
M
X500 19
X600 19
X700 32
X800 32
Release Systems Schematics
TB4
N08

## Door Lock/Indicator Schematics (Door Handle Switches)


K9 Body Control Module
X8 28
2676 GY/VT
X600 36
2676 GY/VT
1
B27RF Front Side Door Outside Handle Switch - Right
A24P Front Side Door Outside Handle - Right
5
1251 BK/WH
X6 31
4995 GY/BU
X800 18
4995 GY/BU
1
B27RR Rear Side Door Outside Handle Switch - Right
A24RR Rear Side Door Outside Handle - Right
5
1250 BK
G300A
X8 16
4994 WH/VT
X700 18
4994 WH/VT
1
B27LR Rear Side Door Outside Handle Switch - Left
A24LR Rear Side Door Outside Handle - Left
5
1150 BK
G301
X6 28
2675 BU
X500 14
2675 BU
1
B27LF Front Side Door Outside Handle Switch - Left
A24D Front Side Door Outside Handle - Left
5
1150 BK
G201B
LOC
DESC

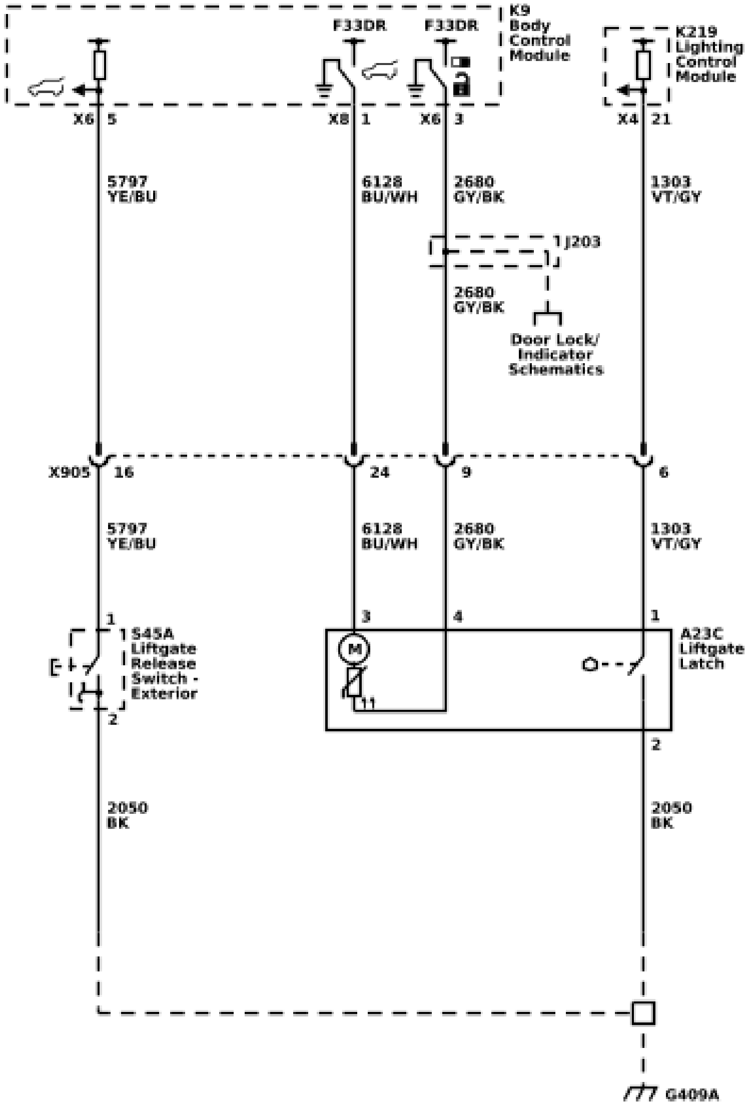
6885475

## Release Systems Schematics (Liftglass Release)


K194
Rear Gate
Module
X4 14
TB5/TCP
6190
GY/GN
K219
Lighting
Control
Module
X5 15
TB4
6190
GY/GN
X4 20
2279
BU/YE
F4DR
K9
Body
Control
Module
X7 17
6188
GY/YE
B+
X1 44
X53A
Body Wiring
Harness
Junction
Block - Rear
KR162
Liftgate
Window
Release
Relay
F49RA
10A
X1 35
5
P7
Display
P16
Instrument
Panel
Cluster
Control
Module
A90
Logic
4089
BU/GN
X905 17
12
3
6190
GY/GN
2279
BU/YE
4089
BU/GN
2050
BK
X907 5
6190
GY/GN
1
S141
Liftgate
Window
Release
Switch -
Exterior
2
3
1
M
M33
Liftgate
Window
Latch
2
2050
BK
2050
BK
G409A

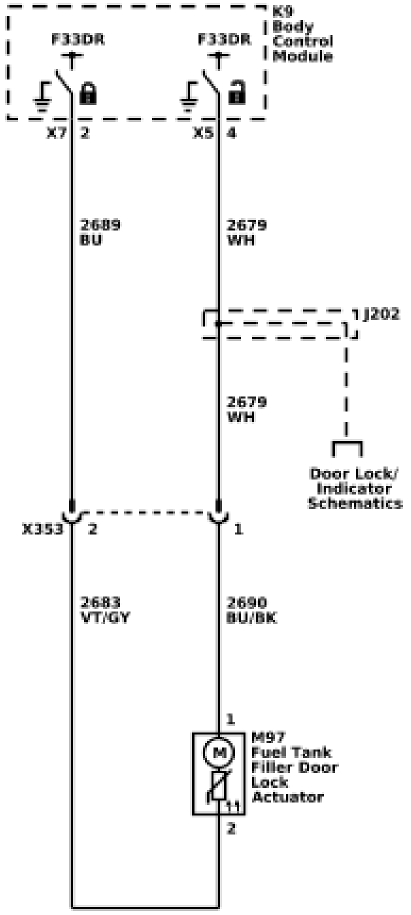
6885476

## Release Systems Schematics (Liftgate Release (TB4))


K9
Body
Control
Module
F33DR
F33DR
K219
Lighting
Control
Module
X6 5
X8 1
X6 3
X4 21
5797
YE/BU
6128
BU/WH
2680
GY/BK
1303
VT/GY
J203
2680
GY/BK
Door Lock/
Indicator
Schematics
X905 16
24
9
6
5797
YE/BU
6128
BU/WH
2680
GY/BK
1303
VT/GY
1
S45A
Liftgate
Release
Switch -
Exterior
2
3
4
M
11
1
A23C
Liftgate
Latch
2
2050
BK
2050
BK
G409A

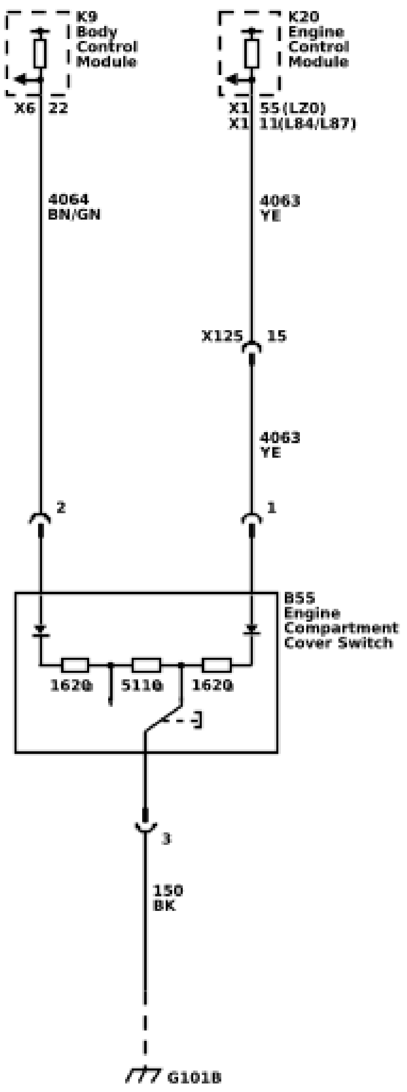
6885477

## Release Systems Schematics (Fuel Tank Filler Door Lock Actuator (N08))


K9
Body
Control
Module
F33DR
F33DR
X7 2
X5 4
2689
BU
2679
WH
1 J202
2679
WH
Door Lock/
Indicator
Schematics
X353 2
1
2683
VT/GY
2690
BU/BK
1
M
M97
Fuel Tank
Filler Door
Lock
Actuator
11
2

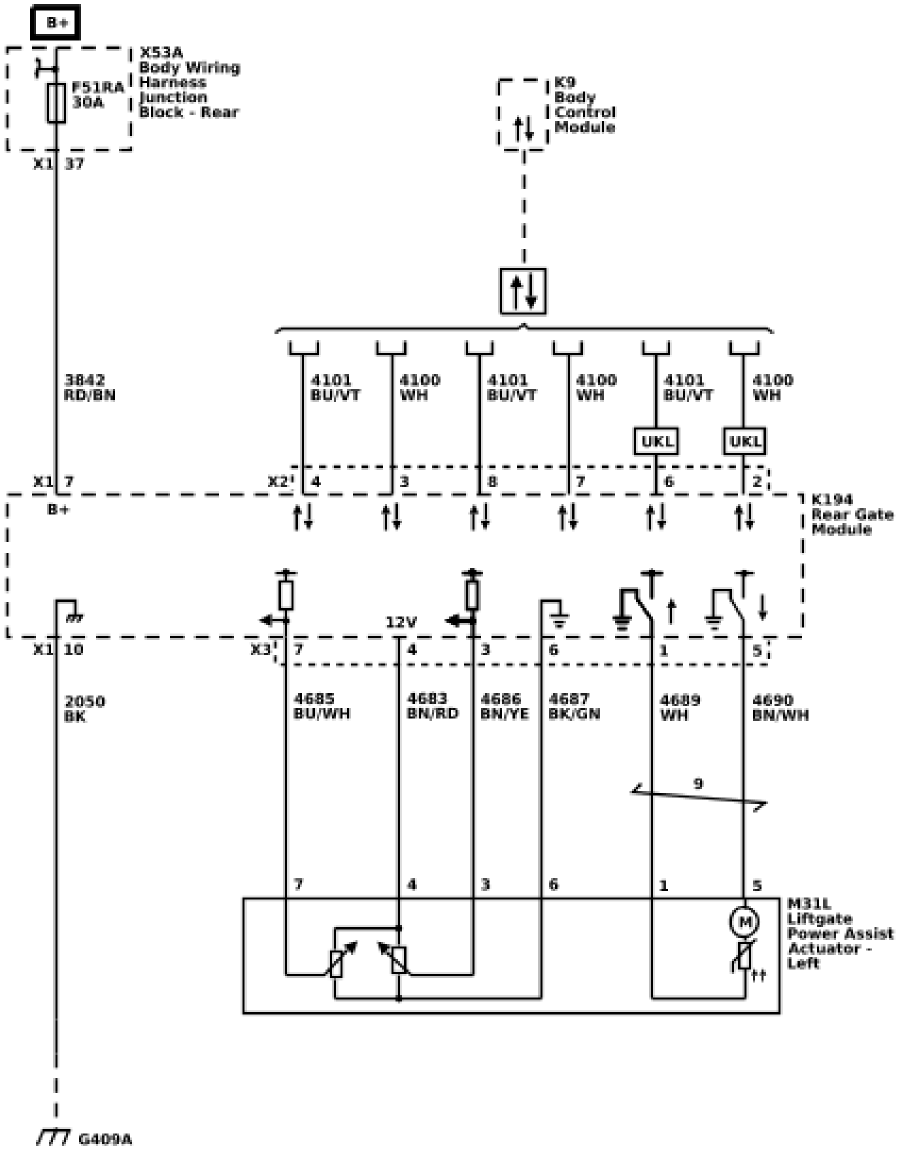
6885478

## Hood Latch Schematics (Engine Compartment Cover Switch)


K9
Body
Control
Module
X6 22
K20
Engine
Control
Module
X1 55(LZ0)
X1 11(L84/L87)
4064
BN/GN
4063
YE
X125 15
4063
YE
2
1
B55
Engine
Compartment
Cover Switch
162Ω
511Ω
162Ω
3
150
BK
G101B

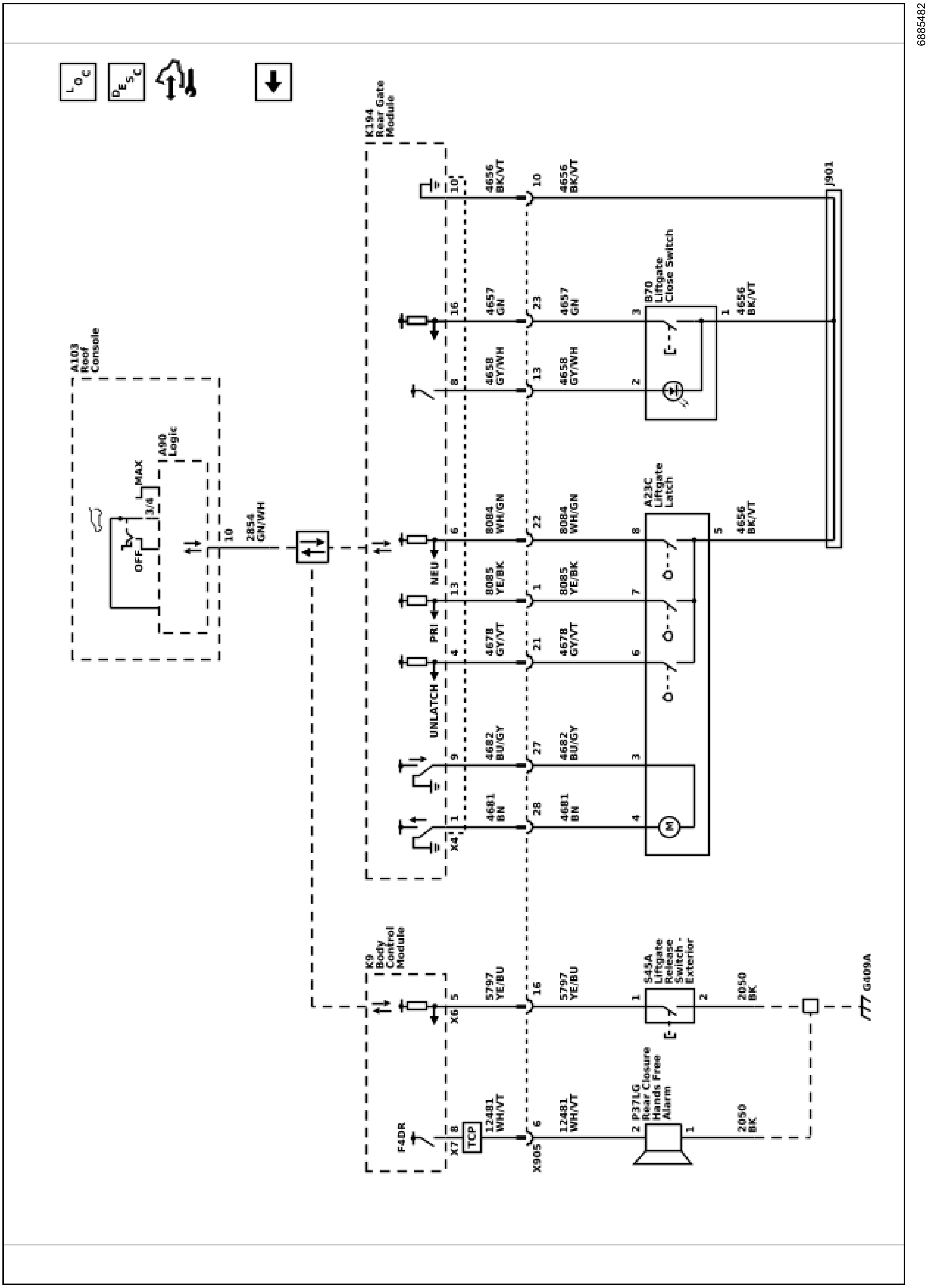
6885480

## Liftgate Schematics (Rear Gate Module Power, Ground, Serial Data, and Liftgate Motor (TB5 / TCP))


B+
X53A Body Wiring Harness Junction Block - Rear
F51RA 30A
X1 37
3842 RD/BN
X1 7
B+
K9 Body Control Module
4101 BU/VT
4100 WH
4101 BU/VT
4100 WH
4101 BU/VT
4100 WH
UKL
UKL
X2 4
3
8
7
6
2
K194 Rear Gate Module
12V
X1 10
X3 7
4
3
6
1
5
2050 BK
4685 BU/WH
4683 BN/RD
4686 BN/YE
4687 BK/GN
4689 WH
4690 BN/WH
9
7
4
3
6
1
5
M
M31L Liftgate Power Assist Actuator - Left
G409A

6885481

## Liftgate Schematics (Liftgate Latch, Controls, and Object Sensors (TB5 / TCP))


6885482
A103 Roof Console
A90 Logic
MAX
3/4
OFF
10
2854 GN/WH
K194 Rear Gate Module
10
4656 BK/VT
10
4656 BK/VT
J901
16
4657 GN
23
4657 GN
3
B70 Liftgate Close Switch
1
4656 BK/VT
8
4658 GY/WH
13
4658 GY/WH
2
6
8084 WH/GN
22
8084 WH/GN
8
A23C Liftgate Latch
5
4656 BK/VT
NEU
13
8085 YE/BK
1
8085 YE/BK
7
PRI
4
4678 GY/VT
21
4678 GY/VT
6
UNLATCH
9
4682 BU/GY
27
4682 BU/GY
3
1
4681 BN
28
4681 BN
4
M
X4
K9 Body Control Module
5
5797 YE/BU
16
5797 YE/BU
1
S45A Liftgate Release Switch - Exterior
2
2050 BK
G409A
X6
F4DR
8
X7
TCP
12481 WH/VT
6
12481 WH/VT
X905
2
P37LG Rear Closure Hands Free Alarm
1
2050 BK

# Description and Operation

## Door Ajar Indicator Description and Operation

### Door Ajar Indicator System Components

The door ajar indicator system consists of the following components:

- Body control module (BCM)
- Instrument cluster
- Driver door latch
- Passenger door latch
- Left rear door latch
- Right rear door latch
- Driver window motor
- Passenger window motor
- Left rear side door window switch
- Right rear side door window switch

### Driver and Passenger Door Ajar

The window motor supplies a 12V signal to the door ajar switch within the door latch, when a door is open the door ajar switch closes pulling the 12V signal low. When the window motor detects the drop in the 12V signal circuit, it will then communicate this status to the BCM via local interconnect network (LIN) bus. The BCM communicates with the instrument cluster via serial data message. The instrument cluster, upon receipt of this serial data message, will illuminate the door ajar indicator and also send a serial data message to the radio to activate the door ajar audible warning when the vehicle speed is greater then 8 km/h (5 mph).

### Rear Doors Ajar

The rear side door window switches each provide a 12V signal to their respective door ajar switch signal circuits. The rear door ajar switches are integral to each rear door latch assembly. When a rear door is opened, the normally open door ajar switch closes. With the door ajar switch closed, ground is provided to the door ajar switch signal circuit and the voltage within the signal circuit drops. The rear side door window switches will detect the voltage drop and will send a serial data message to the body control module which will then send a message to the instrument cluster to command the door ajar message

## Fuel Fill Door Description and Operation

### Fuel Door Release System Components

- Body control module (BCM)
- Fuel door release actuator

The locking and unlocking of the fuel door is a function of the power door lock system.

The body control module powers the reversible door latch actuators by providing battery positive voltage and ground to the appropriate lock and unlock control circuits of the door latches. Transitioning of the lock actuators to the lock or unlocked position depends upon which control circuits receive voltage and which control circuits receive ground. When the interior door lock switch is pressed, the body control module disables the functions of exterior door handle unlock switches preventing the unlatching of the vehicle doors until an interior door unlock switch has been pressed or the appropriate button has been pressed on the keyless entry transmitter.

The body control module provides the driver and left rear door latches and fuel filler door lock actuator (If equipped with RPO N08) with the Unlatch Low Reference Circuit 1.

Each door latch, the fuel filler door lock actuator (If equipped with RPO N08), and the liftgate latch (If equipped with RPO TB4) is provided an Unlatch Control Circuit by the body control module.

When the drivers door is commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 low and will pull the driver door and fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the driver door latch and fuel filler lock actuator to transition to the unlocked/ unlatched state.

## Hood Ajar Indicator Description and Operation

### Hood Ajar Switch

**Hood Status A**
The engine control module (non electric vehicle or hybrid vehicle) or battery energy control module (electric vehicle) applies approximately 5V to the hood status A signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage is pulled low. When the hood is closed, the switch is closed and the voltage remains high.

The engine control module or battery energy control module will not allow the vehicle to shift out of park if the hood status is not closed.

**Hood Status B**
The body control module (BCM) applies approximately 5V to the hood status B signal circuit and monitors the voltage to determine the position of the hood. The hood ajar switch contains a multiplexed resistor. When the hood is open, the switch is open and voltage remains high. When the hood is closed, the switch is closed and the voltage is pulled low.

The BCM uses the hood ajar status as a content theft deterrent alarm trigger.

### Hood Ajar Indicator/Message

If either hood status signal shows the hood is ajar or if there is a fault in either hood status signal circuit a message is displayed on the DIC or the hood ajar indicator will be illuminated.

## Liftgate Ajar Indicator Description and Operation

### Rear Access Open

The lighting control module will monitor the voltage on the liftglate ajar switch signal circuit, when the ajar switch is open, the voltage level within the signal circuit will be greater than 7 volts indicating the liftgate is in the closed position. When the liftgate is open or ajar, the ajar switch will close providing a ground path for the signal circuit, the lighting control module will detect the drop in voltage and will send a serial data message to the driver information center to display the Rear Access Open message.

### Rear Liftglass Open

The lighting control module will monitor the voltage on the liftglass ajar signal circuit, when the ajar switch is open, the voltage level within the signal circuit will be greater than 7 volts indicating the liftgate window is in the closed position. When the liftgate window is open or ajar, the ajar switch will close providing a ground path for the signal circuit, the lighting control module will detect the drop in voltage and will send a serial data message to the driver information center to display the Rear Liftglass Open message.

## Liftgate Ajar Indicator Description and Operation

### Rear Access Open

The Rear Gate Module provides 12V to the Liftgate Latch unlatch and primary signal circuits. Ground is applied at all times to the Liftgate Latch. When the liftgate is open the unlatch switch will close providing ground to the unlatch signal circuit. The Rear Gate Module will detect the voltage drop on the signal circuit and send a serial data message to the driver information center indicating the liftgate ajar status, upon receipt of this message the driver information center will display the Rear Access Open message.

### Rear Liftglass Open

The lighting control module will monitor the voltage on the liftglass ajar signal circuit, when the ajar switch is open, the voltage level within the signal circuit will be greater than 7 volts indicating the liftgate window is in the closed position. When the liftgate window is open or ajar, the ajar switch will close providing a ground path for the signal circuit, the lighting control module will detect the drop in voltage and will send a serial data message to the driver information center to display the Rear Liftglass Open message.

## Liftgate Description and Operation

### Liftgate/Liftgate Window Release Components

The liftgate release system consists of the following components:

- Body control module
- Lighting control module
- Liftgate latch assembly
- Exterior liftgate release switch
- Exterior liftgate window release switch
- Liftgate window latch
- Liftgate window release relay

### Liftgate Latch Assembly

**Note:** The function of the liftgate latch and the liftgate window latch will be disabled if the rear wiper motor has been activated and wiping the liftgate window or is not in the PARK position.

When the passenger door, right rear door and liftgate have been commanded to lock with a door lock switch or a keyless entry transmitter, the exterior liftgate release switch will become inoperative the same way the passenger door handles will become inoperative to prevent unauthorized access. Also the passenger and right rear doors must be commanded to unlock to enable the exterior liftgate release switch. When the exterior liftgate release switch is pressed, the body control module will provide B+ voltage to the liftgate latch unlatch control circuit and ground to the unlock control 2 circuit causing the liftgate latch assembly to perform the unlatch function releasing the liftgate and allowing the liftgate to be pulled open.

### Liftgate Window Latch Assembly

**Exterior Liftgate Window Release Switch**
The lighting control module supplies and monitors a 12V signal to the liftgate window unlatch switch so that when the switch is pressed, the voltage within the signal circuit is pulled low and in response, the lighting control module will detect the voltage drop and send a serial data message to the body control module to command the liftgate window to release.

**Liftgate Window Latch**
When body control module receives a liftgate window release command from the liftgate window unlatch switch, the body control module applies voltage to the liftgate window unlatch relay control circuit, which energizes the coil side of the relay. The switch side of the liftgate window unlatch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the liftgate window latch. The liftgate window latch is continuously grounded and when it receives the voltage pulse, it will become energized and the latch will activate releasing the liftgate window so that it may be manually raised to an open position.

## Liftgate Description and Operation

## System Description

The power liftgate system consists of the following components:

- Rear gate module
- Body control module
- Lighting Control Module
- Liftgate position sensor (part of the power assist actuator)
- Interior liftgate rotary switch
- Exterior liftgate release switch
- Liftgate close switch
- Liftgate latch assembly
- Liftgate power assist actuator
- Exterior liftgate window release switch
- Liftgate window latch assembly
- Liftgate window release relay
- Keyless entry transmitter

## Power Liftgate Operation

The power liftgate operations will be suspended if the rear wiper motor has been activated and wiping the liftgate window, the transmission selector is not in P (park) or if the vehicle speed is above 3KPH

The tail lamps will then flash 3X to indicate that the body control module has received a request to power open or power close

The power liftgate can be commanded to power open and power close by the following methods:

- An open or close command from the interior liftgate rotary switch
- An open command from the exterior liftgate release switch
- A close command from the liftgate close switch
- An open or close request by pressing the appropriate button 2x quickly on the keyless entry transmitter (¾ or the MAX modes only)

The rear gate module will respond to a request by commanding the liftgate latch to release the liftgate and activate the liftgate motor in the liftgate power assist actuator and raise the liftgate to the open position or to lower and cinch the liftgate closed.

## Power Liftgate System

The rear gate module continuously monitors power liftgate operation and calculates its location and direction of travel from an liftgate position sensor (part of the power assist actuator). One input returns the position of the liftgate relative to the x-axis and y-axis. The rear gate module then uses these 2 inputs together to calculate its angle relative to the liftgate. The interior liftgate rotary switch contains resistors which will incrementally drop the voltage level in the signal circuit as the switch rotated from the OFF position to the ¾ position or the MAX position, the front overhead console assembly will detect the change in voltage and will send a serial data message to the rear gate module which will monitor the x-axis and y-axis as the liftgate is in motion to stop the liftgate parallel to the vehicle roof if the rotary switch is in the ¾ setting or to open fully if the rotary switch is in the MAX setting.

The liftgate latch is a bi-directional motor and latch or unlatch operation is the result of the direction of the motor rotation. The rear gate module controls the liftgate latch through the control circuits by supplying power and ground in the appropriate polarity. The motor control circuits are monitored by the rear gate module prior to activation for a high or low condition and during motor operation for an insufficient current flow condition. The unlatch, primary, and neutral switches are part of the liftgate latch and are used by the rear gate module to determine the state of the latch during the process of latching or unlatching and will send the status of the latches to the body control module which is used to determine if the liftgate is closed or ajar. Each of the latch switch signal circuits are supplied battery voltage and monitored within the rear gate module. The latch switches share a common low reference circuit from the rear gate module and when the switch contacts close the signal circuit goes low and the rear gate module determines the switch to be active.

The exterior liftgate release switch circuit is supplied battery voltage by the body control module, when the switch is pressed the contacts close and the signal circuit goes low, the body control module will detect the voltage drop and will send a serial data message to the rear gate module requesting the rear gate open request (vehicle unlocked).

The liftgate close switch signal circuit is supplied battery voltage by the rear gate module. The switch shares a common low reference circuit from the rear gate module and when the switch is pressed the contacts close and the signal circuit goes low, the rear gate module will detect the voltage drop and will send a serial data message to the body control module requesting the rear gate close request.

For vehicles without the optional passive keyless entry, when the exterior liftgate release switch is pressed, the body control module will check the status of the vehicle door locks. If the vehicle doors are locked, the body control module will ignore the signal from the liftgate handle switch. If the vehicle doors are unlocked, the body control module will permit the liftgate to unlatch and power open when the exterior liftgate release switch is pressed.

For vehicles with the optional passive keyless entry system, the body control module monitors the proximity of the keyless entry transmitter. If the exterior liftgate release switch is pressed and the keyless entry transmitter is within range, the body control module will send a serial data message to the rear gate module and will permit the liftgate to unlatch and power open. If the doors are locked and the keyless entry transmitter is not within range, the body control module will ignore the signal from the exterior liftgate release switch and the liftgate will not power open.

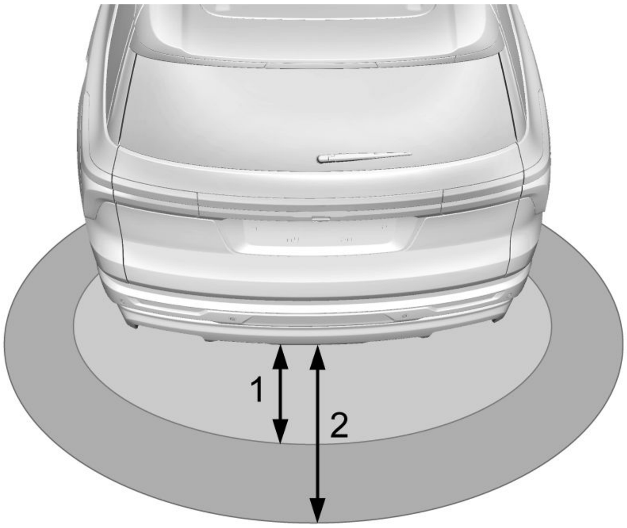
## Power Liftgate Object Detection

The rear gate module continuously monitors power liftgate operation and calculates its location and direction of travel from an liftgate position sensor (part of the power assist actuator). One input returns the position of the liftgate relative to the x-axis and y-axis. The rear gate module then uses these 2 inputs together to calculate its position and motion, if the rear gate module detects a current spike and motion reduction in the liftgate position sensor during the power close operation, it will command the liftgate to reverse direction.

## Power Liftgate Hands Free System Operation (TCP)

### Hands Free System Operation

If equipped, the liftgate may be opened with a remote key by entering the authentication zone from outside the approach zone. Both zones are located near the rear of the vehicle.



6373234

1. Authentication Zone
2. Approach Zone

To cancel the feature after entering the authentication zone, the user may perform a single press of the button, press the exterior liftgate switch, or step out of the authentication zone. The hands-free feature will not operate while the liftgate is moving. To stop the liftgate while in motion, use any of the liftgate switches.

The hands-free feature can be customized. To view available settings for this feature, from the infotainment screen, select Settings > Vehicle > Comfort and Convenience > Hands-Free Storage Access. Choose from the following:

This feature can be turned on and off using the exterior liftgate switch while the remote key is in the authentication zone. To do this, press and hold the switch for several seconds. Upon successfully enabling or disabling the feature using this method, the vehicle taillights will flash.

### Rear Closure Hands Free Alarm Operation

When the Body Control Module detects that the Liftgate Hands Free function is requested, it will command the Rear Closure Hands Free Alarm to activate by sending a control signal through the hands free alarm control circuit. When the Rear Closure Hands Free Alarm receives the control signal from the Body Control Module, the Rear Closure Hands Free Alarm will activate and emit an audible tone to alert any nearby person(s) that the Power Liftgate is Operating.

## Manual Liftgate Operation

**Note:** The interior liftgate rotary switch must be in the ¾ position or the MAX position for the remote keyless entry transmitter (key fob) to command the liftgate, The OFF setting will disable the liftgate release of the remote keyless entry transmitter (key fob)

The operator has the option to disable the power liftgate operations by selecting the “OFF” position on the interior liftgate rotary switch. The releasing and cinching for the liftgate latch will function normally, however, the operator must use the exterior liftgate handle switch to activate the liftgate latch and manually pull the liftgate open and push the liftgate closed. All power liftgate operations will be suspended for as long as the liftgate rotary switch is in the “OFF” position.

## Liftgate Window Latch Assembly

### Exterior Liftgate Window Release Switch

The rear gate module supplies and monitors a 12V signal to the liftgate window unlatch switch so that when the switch is pressed, the voltage within the signal circuit is pulled low and in response, the rear gate module will detect the voltage drop and send a serial data message to the body control module to command the liftgate window to release.

### Liftgate Window Latch

When body control module receives a liftgate window release command from the liftgate window unlatch switch, the body control module applies voltage to the liftgate window unlatch relay control circuit, which energizes the coil side of the relay. The switch side of the liftgate window unlatch relay then momentarily closes, supplying a brief pulse of battery positive voltage to the liftgate window latch. The liftgate window latch is continuously grounded and when it receives the voltage pulse, it will become energized and the latch will activate releasing the liftgate window so that it may be manually raised to an open position.

## Power Door Locks Description and Operation

## Door Lock System Components

The power door lock system consists of the following components:

- Driver door lock switch
- Passenger door lock switch
- Left rear door lock switch
- Right rear door lock switch
- Driver front side door window control switch
- Passenger front side door window switch
- Driver front side door latch
- Passenger front side door latch
- Left rear side door latch
- Right rear side door latch
- Exterior door handle switches
- Body control module
- Lighting control module

## Door Lock System Controls

The power door lock system can be controlled by any of the following:

- Power door lock switch activation
- Keyless entry lock or unlock command
- Delayed locking command
- Automatic door lock command
- When the OnStar® system is used to unlock the driver door

## Door Lock and Unlock Operation

The driver or passenger front side door window control switch will monitor the voltage of their respective door lock switches, when the driver or passenger door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the corresponding front side door window control switch will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The lighting control module will monitor the voltage of the left rear and right rear door lock switches, when the left rear or right rear door lock switch is activated in the lock or unlock position the signal voltage will be pulled low, the lighting control module will detect the voltage drop in the signal circuit and will send a serial data message to the body control module requesting the door lock or unlock command.

The body control module powers the reversible door latch actuators by providing battery positive voltage and ground to the appropriate lock and unlock control circuits of the door latches. Transitioning of the lock actuators to the lock or unlocked position depends upon which control circuits receive voltage and which control circuits receive ground. When the interior door lock switch is pressed, the body control module disables the functions of exterior door handle unlock switches preventing the unlatching of the vehicle doors until an the interior door unlock switch has been pressed or the appropriate button has been pressed on the keyless entry transmitter.

The body control module provides the driver and left rear door latches and fuel filler door lock actuator (If equipped with RPO N08) with the Unlatch Low Reference Circuit 1.

The body control module provides the passenger and right rear door latches and the liftgate latch (If equipped with RPO TB4) with the Unlatch Low Reference Circuit 2.

Each door latch, the fuel filler door lock actuator (If equipped with RPO N08), and the liftgate latch (If equipped with RPO TB4) is provided an Unlatch Control Circuit by the body control module.

When the drivers door is commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 low and will pull the driver door and fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the driver door latch and fuel filler lock actuator to transition to the unlocked/ unlatched state.

When all doors have been commanded to unlock the body control module will pull the Unlatch Low Reference Circuit 1 and Unlatch Low Reference Circuit 2 low and each door latch and the fuel filler lock actuator Unlatch/Unlock Control Circuits will be pulled high causing the doors and fuel filler lock actuator to transition to the unlocked/unlatched state.

When the TB4 liftgate is commanded to open the body control module, if the vehicle doors are unlocked, will pull the Unlatch Low Reference Circuit 2 low and the Rear Closure Unlatch Actuator Unlatch Control Circuit will be pulled high causing the TB4 liftgate Latch to activate and release the liftgate.

When the lock actuators are inactive the circuits are disconnected from power and ground and the circuits will have a floating voltage.

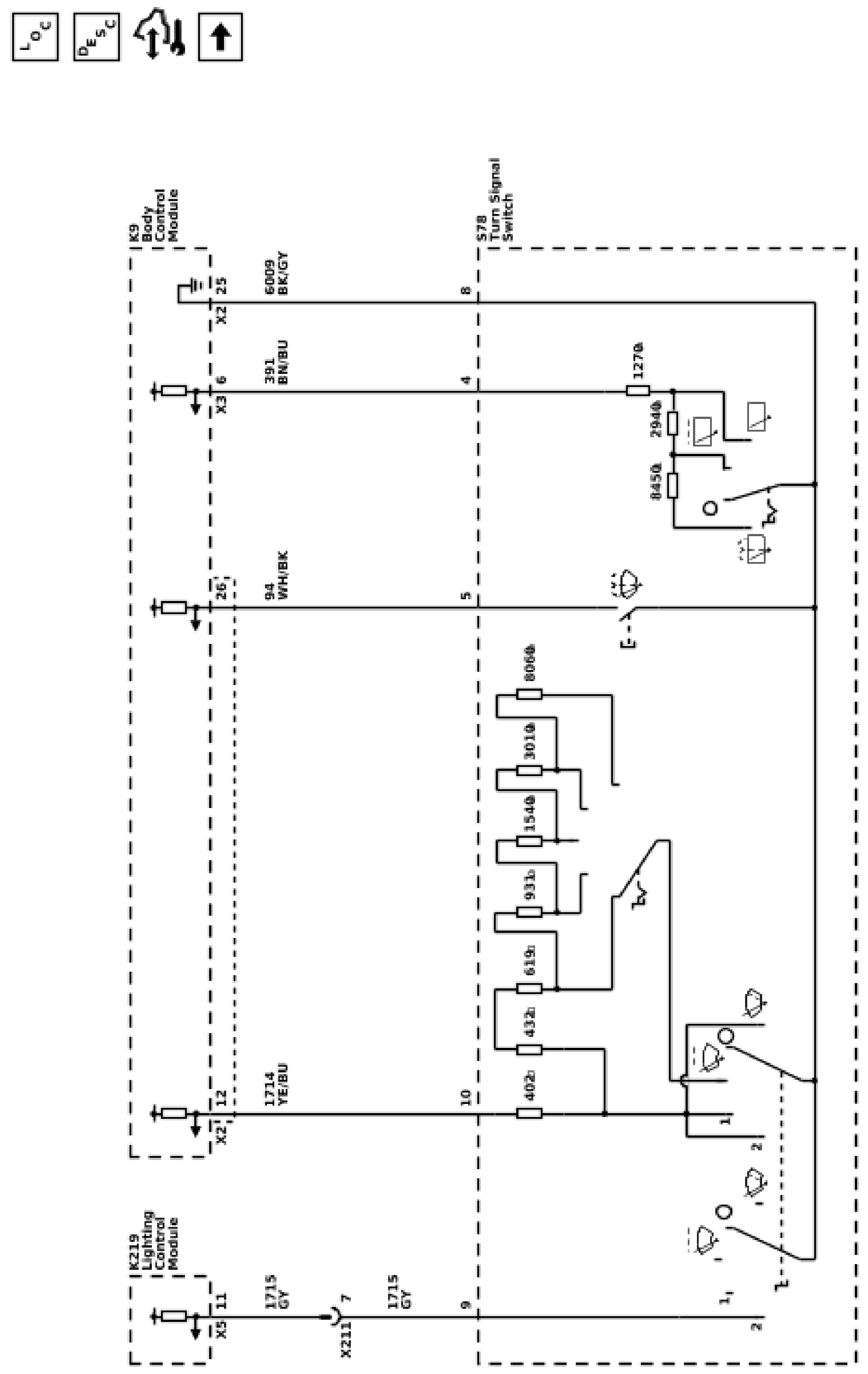
### Passive Door Lock/Unlock Operation

The exterior door handle switch signal circuits provide inputs to the body control module when the exterior door handle switches are activated. These inputs allow the body control module to detect a door lock or a door unlock request. The body control module provides a 7 V signal to each exterior door handle switch via the door handle switch signal circuits. When a door handle switch is pressed, the switch closes and the voltage signal within the signal circuit is pulled to ground. The body control module will detect the voltage drop and a low frequency antenna will transmit a challenge to the keyless entry transmitter. If the challenge is met, the keyless entry transmitter will respond, and the body control module will command the door(s) to be locked or unlocked

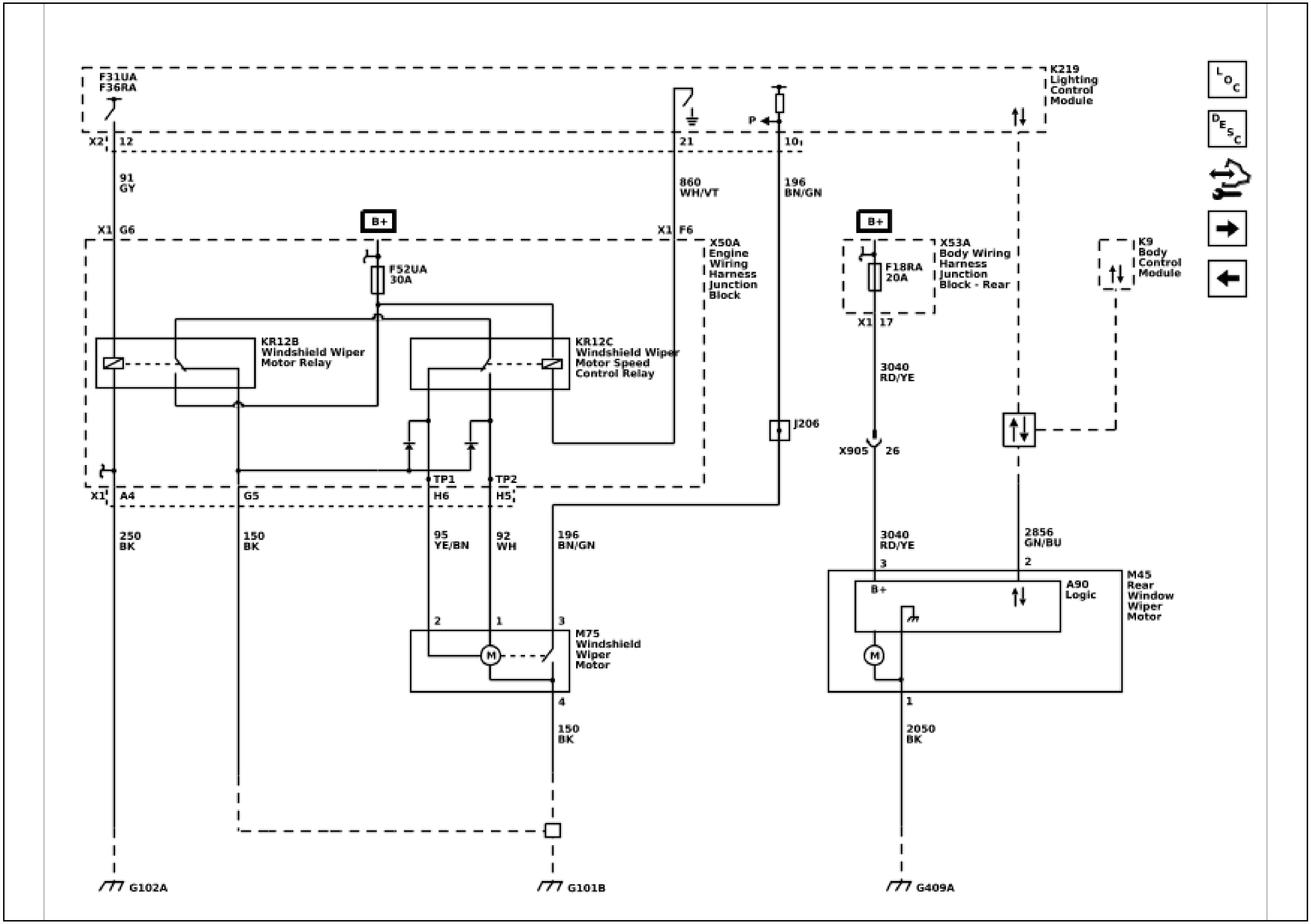
# Wipers and Washers

## Schematic and Routing Diagrams

## Wiper/Washer Schematics (Controls)

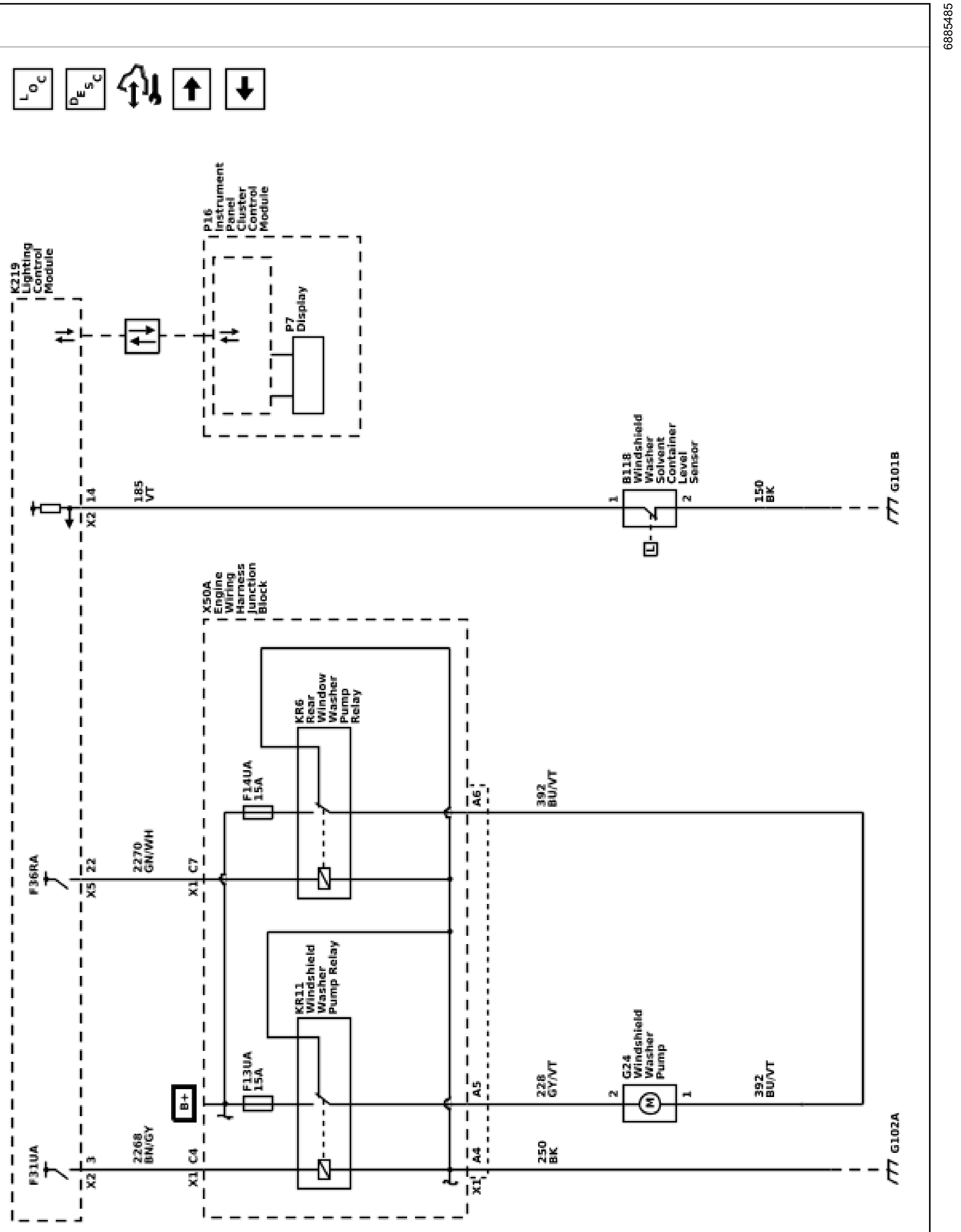

6885483
K9 Body Control Module
S78 Turn Signal Switch
K219 Lighting Control Module
X2 25
6009 BK/GY
8
X3 6
391 BN/BU
4
1270Ω
294Ω
845Ω
X2 26
94 WH/BK
5
806Ω
301Ω
154Ω
931Ω
619Ω
432Ω
402Ω
X2 12
1714 YE/BU
10
1
2
X5 11
1715 GY
X211 7
1715 GY
9
1
2

## Wiper/Washer Schematics (Wiper Motors)

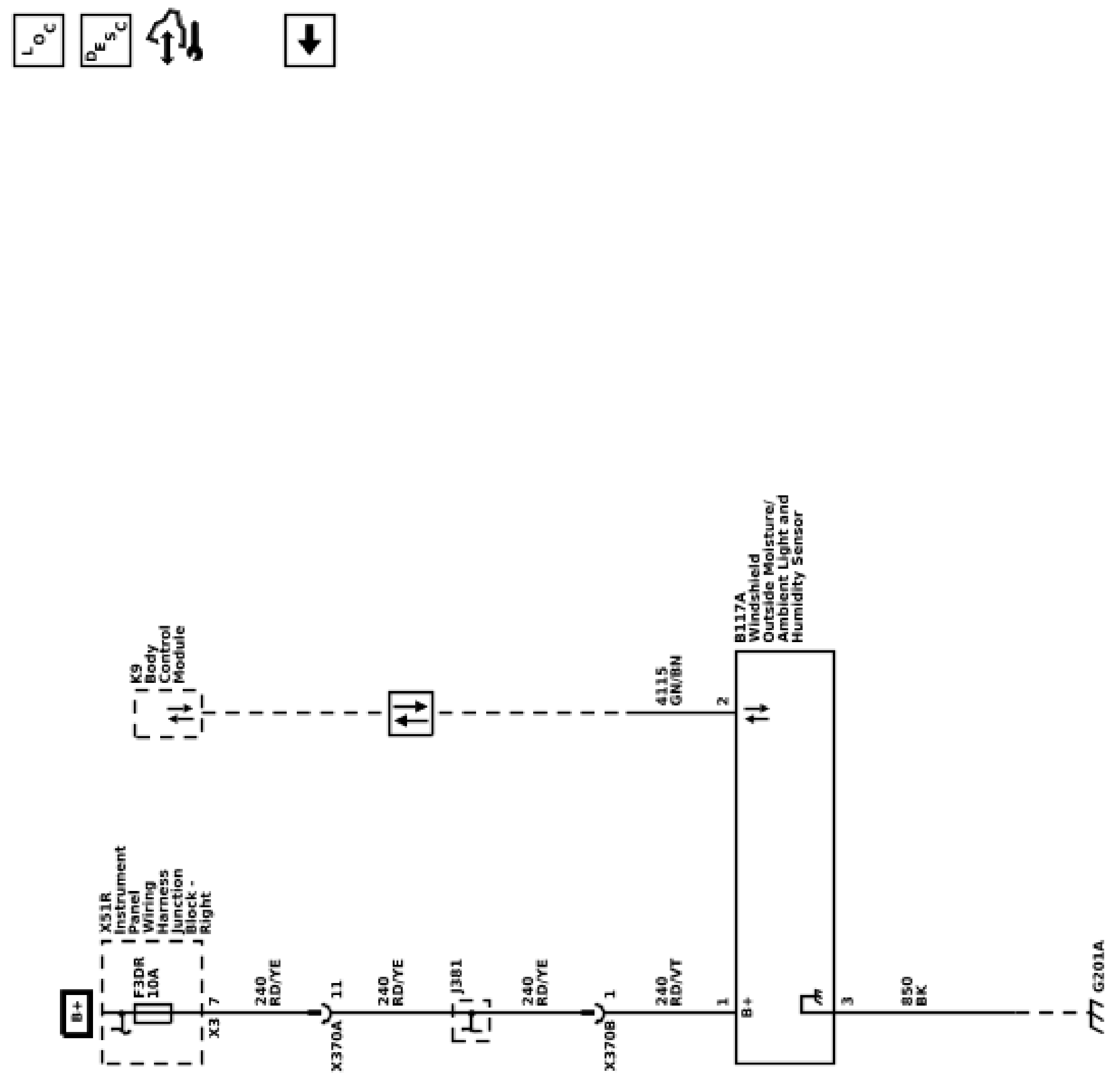

K219 Lighting Control Module
F31UA F36RA
X2 12
21
P
10
91 GY
860 WH/VT
196 BN/GN
B+
X1 G6
X1 F6
X50A Engine Wiring Harness Junction Block
F52UA 30A
KR12B Windshield Wiper Motor Relay
KR12C Windshield Wiper Motor Speed Control Relay
J206
TP1
TP2
X1 A4
G5
H6
H5
250 BK
150 BK
95 YE/BN
92 WH
196 BN/GN
2
1
3
M75 Windshield Wiper Motor
M
4
150 BK
G102A
G101B
B+
X53A Body Wiring Harness Junction Block - Rear
F18RA 20A
X1 17
3040 RD/YE
X905 26
3040 RD/YE
3
K9 Body Control Module
2856 GN/BU
2
M45 Rear Window Wiper Motor
A90 Logic
B+
M
1
2050 BK
G409A
L O C
D E S C

6885484

## Wiper/Washer Schematics (Washer Pump)


6885485
K219 Lighting Control Module
P16 Instrument Panel Cluster Control Module
P7 Display
X2 14
185 VT
B118 Windshield Washer Solvent Container Level Sensor
1
2
150 BK
G101B
X50A Engine Wiring Harness Junction Block
F36RA
X5 22
2270 GN/WH
X1 C7
KR6 Rear Window Washer Pump Relay
F14UA 15A
A6
392 BU/VT
KR11 Windshield Washer Pump Relay
F13UA 15A
B+
A5
228 GY/VT
G24 Windshield Washer Pump
M
392 BU/VT
F31UA
X2 3
2268 BN/GY
X1 C4
A4
X1
250 BK
G102A

## Wiper/Washer Schematics (Windshield Outside Moisture/Ambient Light and Humidity Sensor)


6885486
LOC
DESC
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
240 RD/YE
X370B 1
240 RD/VT
1 B+
K9 Body Control Module
4115 GN/BN
2
B117A Windshield Outside Moisture/ Ambient Light and Humidity Sensor
3
850 BK
G201A

# Description and Operation

## Wiper/Washer System Description and Operation

### Front Windshield Wiper Operation

The windshield wipers system allows the driver to clear the vehicle's windshield using a discrete switch or through an automatic rain sensing system. The windshield wiper system functions through a primary control, but also allows redundant high speed-only operation in the event of a system fault. The wiper systems uses the S82 Windshield Wiper/Washer Switch as the primary means of driver control, along with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to modulate intermittent wiper operation. The S82 Windshield Wiper/Washer Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, and with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor over LIN, to control wiper activation.

**Low Speed Wiper Operation**
With the S82 Windshield Wiper/Washer Switch in the low speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN, requesting consistent low speed wiping operation. To initiate low speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper low speed control circuit of the M75 Windshield Wiper Motor.

**Intermittent Wiper Operation**
With the S82 Windshield Wiper/Washer Switch in the intermittent position, the discrete signal circuit to the K9 Body Control Module is pulled down through a number of resistors within a resistor ladder to a low reference provided by the K9 Body Control Module. The number of resistors the signal travels through is dependent on the intermittent selection made on the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module interprets this range of voltage pull-down as a request for intermittent wiper activation, with each pull-down voltage value equating an intermittent delay (sensitivity) level. If the rain sense is enabled the K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes windshield optics to determine the amount of water on the windshield and will communicate this info to the K9 Body Control Module, which will vary wiping cadence based on the intermittent sensitivity selection on the S82 Windshield Wiper/Washer Switch and the amount of water on the windshield. If the rain sense is disabled, the K9 Body Control will vary the wiping cadence based on a preset amount of time determined by the intermittent delay selection on the S82 Windshield Wiper/Washer Switch. To initiate wiper operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the normally closed contacts of the KR12C Windshield Wiper Speed Control Relay, to the low speed control circuit of the M75 Windshield Wiper Motor.

**High Speed Wiper Operation**
With the S82 Windshield Wiper/Washer Switch in the high speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. In addition to this pull-down signal, a second switch in the S82 Windshield Wiper/Washer Switch is also pulled down to low reference. This signal is a discrete input to the K219 Lighting Control Module. The K219 Lighting Control Module requests wiping operation. To initiate high speed operation, the K219 Lighting Control Module energizes the KR12B Windshield Wiper Relay and grounds the KR12C Windshield Wiper Speed Control Relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the KR12B Windshield Wiper Relay, through the switched contacts of the KR12C Windshield Wiper Speed Control Relay, to the windshield wiper motor high speed control circuit of the M75 Windshield Wiper Motor.

**Mist (Single Wipe) Operation**
The mist (single wipe) position is a momentary switch position that will return the S82 Windshield Wiper/Washer Switch to the off position as soon as the switch is released. With the S82 Windshield Wiper/Washer Switch in the mist (single wipe) position, the discrete signal circuit to the K9 Body Control Module is pulled down through two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting consistent low speed wiping operation as long as the S82 Windshield Wiper/Washer Switch is held in the mist (single wipe) position. If the mist (single wipe) position

is only briefly selected, the K9 Body Control Module will request only a single wipe.

**Wiper Park Operation**
With the S82 Windshield Wiper/Washer Switch in the off position, the discrete signal circuit to the K9 Body Control Module is pulled down through one resistor in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request to stop wiper activation. The K9 Body Control Module communicates with the K219 Lighting Control Module via CAN, requesting wiper operation stop. At this time, the K219 Lighting Control Module will deactivate the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay. The relay contacts will switch back to their normally closed position and will apply ground to the wiper motor power inputs through the normally closed contacts of the wiper relays. This deactivates and dynamically brakes the wiper motor in the park position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the K219 Lighting Control Module will continue to operate the motor until the wipers reach the park position. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The K219 Lighting Control Module will park the wipers next time the ignition is turned ON.

The windshield wiper system consists of the following electrical components:

- S82 Windshield Wiper/Washer Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR12C Windshield Wiper Speed Control Relay
- B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor
- M75 Windshield Wiper Motor

## Front Windshield Wiper Components

**S82 Windshield Wiper/Washer Switch**
The S82 Windshield Wiper/Washer Switch is the primary input to the K9 Body Control Module for the driver to control windshield wiper operation. The S82 Windshield Wiper/Washer Switch also provides discrete input to the K219 Exterior Lighting Control Module and M75 Windshield Wiper Motor during high speed wiper operation.

The S82 Windshield Wiper/Washer Switch contains three individual internal switch. One switch changes between mist (single wipe), off, intermittent, low speed, and high speed selection. The second switch changes with differing intermittent sensitivity selection. The third switch is only active when high speed wiper operation is selected. A resistor ladder is also used to determine switch selection and intermittent sensitivity selection. The high speed switch does not utilize the resistor ladder.

The K9 Body Control Module provides the S82 Windshield Wiper/Washer Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. This voltage drop will vary depending on the number of resistors in the resistor ladder, which changes depending on switch position. In the off position, current flows through a single resistor. In the mist (single wipe), low speed, and high speed position, current flows through two resistors. In the intermittent position, current flows through three or more resistors, depending on the intermittent sensitivity selected.

The S82 Windshield Wiper/Washer Switch provides a discrete switch input to the K219 Lighting Control Module during high speed wiper operation. Voltage is applied by the K219 Lighting Control Module to this signal circuit and voltage drop is monitored to determine switch selection. When high speed operation is selected, the signal circuit is pulled to ground (low reference).

**K9 Body Control Module**
The K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to request wiper operation. The K9 Body Control Module responds to input requests from the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module provides a constant ground for the S82 Windshield Wiper/Washer Switch and monitors a signal circuit to determine the requested windshield wiper position.

The K9 Body Control Module communicates with the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor via LIN. Messages are received from the B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor to indicate the amount of water on the windshield.

**K219 Lighting Control Module**
The K219 Lighting Control Module controls the wiper motor via two PCB relays (KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay). The K219 Lighting Control Module receives a message from K9 Body Control Module over CAN to determine what type of wiper operation is requested.

**KR12B Windshield Wiper Relay**
The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is

requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor through the KR12C Windshield Wiper Speed Control Relay, enabling wiper operation.

**KR12C Windshield Wiper Speed Control Relay**
The KR12C Windshield Wiper Speed Control Relay controls B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a ground controlled by the K219 Lighting Control Module. The switch side of the relay receives B+ through the KR12B Windshield Wiper Relay. When high speed wiper operation is requested, the K219 Lighting Control Module will provide ground to the coil side of the relay. This will energize the relay, closing the high current contact, and supply the B+ to the M75 Windshield Wiper Motor high speed control, enabling high speed wiper operation.

**B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor**
**Note:** Due to the sensitivity of the sensor, the wipers may swipe once upon start up or rapid lighting changes.

The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor utilizes an internal infrared LED and an optic sensor to determine the amount of water on the windshield. The infrared LED bounces infrared light against the inside of the windshield. The optic sensor measures the amount of light returned after bouncing off the windshield. With a dry windshield, all light bounced off the windshield is returned to the optic sensor. As water accumulates on the windshield, the light input to the optic sensor is diffused and reduced. The amount of light reduction corresponds directly to the amount of water on the windshield. The B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor interprets the amount of light returned and communicates this info to the K9 Body Control Module, which will control intermittent wiper operation based on the sensitivity selection of the S82 Windshield Wiper/Washer Switch and the amount of water on the windshield.

**M75 Windshield Wiper Motor**
The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

### Rear Window Wiper Operation

The rear window wiper system allows the driver to clear the vehicle’s rear window using a discrete switch. The rear wiper systems uses the S82 Windshield Wiper/Washer Switch as the means of control. The S82 Windshield Wiper/Washer Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the M45 Rear Wiper Motor via LIN to control wiper activation.

**Low Speed Wiper Operation**
With the S82 Windshield Wiper/Washer Switch in the low speed position, the discrete signal circuit to the K9 Body Control Module is pulled down through one resistor in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module communicates with the M45 Rear Wiper Motor over LIN, requesting consistent low speed wiping operation.

**Intermittent Wiper Operation**
With the S82 Windshield Wiper/Washer Switch in the intermittent position, the discrete signal circuit to the K9 Body Control Module is pulled down through a two resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module communicates with the M45 Rear Wiper Motor over LIN, requesting consistent intermittent wiping operation. The K9 Body Control will vary the wiping cadence based on a preset amount of time.

**Mist (Single Wipe) Operation**
The mist (single wipe) position is a momentary switch position that will return the S82 Windshield Wiper/Washer Switch to the off position as soon as the switch is released. With the S82 Windshield Wiper/Washer Switch in the mist (single wipe) position, the discrete signal circuit to the K9 Body Control Module is pulled down through three resistors in a resistor ladder to a low reference provided by the K9 Body Control Module. The K9 Body Control Module interprets this specific voltage pull-down as a request for wiper activation. The K9 Body Control Module communicates with the M45 Rear Wiper Motor via LIN, requesting consistent low speed wiping operation as long as the S82 Windshield Wiper/Washer Switch is held in the mist (single wipe) position. If the mist (single wipe) position is only briefly selected, the K9 Body Control Module will request only a single wipe.

**Wiper Park Operation**
With the S82 Windshield Wiper/Washer Switch in the off position, the discrete signal circuit to the K9 Body Control Module is opened. The K9 Body Control Module interprets this as a request to stop wiper activation. The K9 Body Control Module communicates

with the M45 Rear Wiper Motor via LIN, requesting wiper operation stop. The M45 Rear Wiper Motor will park the rear window wiper in their lowest position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the K9 Body Control Module will continue to operate the motor until the wiper reaches the park position. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The K9 Body Control Module will park the wipers next time the ignition is turned ON.

The rear window wiper system consists of the following electrical components:

- S82 Windshield Wiper/Washer Switch
- K9 Body Control Module
- M45 Rear Wiper Motor

### Rear Window Wiper Components

**S82 Windshield Wiper/Washer Switch**
The S82 Windshield Wiper/Washer Switch is the primary input to the K9 Body Control Module for the driver to control rear window wiper operation.

The S82 Windshield Wiper/Washer Switch contains one individual internal switch used to request mist (single wipe) off, intermittent, and low speed selection.

The K9 Body Control Module provides the S82 Windshield Wiper/Washer Switch with ground through a single low reference circuit and monitors the switch position through a single signal circuit. Voltage is applied by the K9 Body Control Module to this signal circuit and voltage drop is monitored to determine switch selection. This voltage drop will vary depending on the number of resistors in the resistor ladder, which changes depending on switch position. In the off position, current doesn’t flow. In the mist (single wipe) position current flows through three resistors, in the intermittent speed position current flows through two resistors, and in the low speed position, current flows through one resistor.

**K9 Body Control Module**
The K9 Body Control Module will send a LIN message to the M45 Rear Wiper Motor to request wiper operation. The K9 Body Control Module responds to input requests from the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module provides a constant ground for the S82 Windshield Wiper/Washer Switch and monitors a signal circuit to determine the requested windshield wiper position.

**M45 Rear Wiper Motor**
The M45 Rear Wiper Motor receives a constant B+ and chassis ground.

The M45 Rear Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M45 Rear Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

### Windshield Washer Operation

The windshield washer system allows the driver to clean the vehicle’s windshield or rear window using a discrete switch. The washer system uses the S82 Windshield Wiper/Washer Switch as the primary means of driver control. The S82 Windshield Wiper/Washer Switch is a discrete input to the K9 Body Control Module. The K9 Body Control Module communicates with the K219 Lighting Control Module over CAN to control G24 Windshield Washer Pump activation. The K9 Body Control Module also communicates with the K219 Lighting Control Module to control B+ to the M75 Windshield Wiper Motor during operation.

The windshield wiper system consists of the following electrical components:

- S82 Windshield Wiper/Washer Switch
- K9 Body Control Module
- K219 Lighting Control Module
- KR12B Windshield Wiper Relay
- KR6 Rear Window Washer Pump Relay
- KR11 Windshield Washer Pump Relay
- G24 Windshield Washer Pump
- M45 Rear Wiper Motor
- M75 Windshield Wiper Motor
- B118B Windshield Washer Fluid Level Switch

### Windshield Washer Components

**S82 Windshield Wiper/Washer Switch**
The S82 Windshield Wiper/Washer Switch is the primary input to the K9 Body Control Module for the driver to control washer operation.

For front washers, the K9 Body Control Module provides the S82 Windshield Wiper/Washer Switch with ground through a single low reference circuit and monitors the two switch positions through two signal circuits. Voltage is applied by the K9 Body Control Module to the signal circuits and voltage drop is monitored to determine switch selection. For front washers, the S82 Windshield Wiper/Washer Switch contains an internal switch dedicated to front windshield washer operation. When the switch is closed, the signal circuit is pulled to ground, indicating front washer operation is requested. For rear washers, the switch is part of a resistor ladder. The voltage drop will vary depending on the number of resistors in the resistor ladder. When the switch is closed, the signal circuit is pulled to ground through three resistors, indicating rear washer operation is requested.

### K9 Body Control Module

The K9 Body Control Module responds to input requests from the S82 Windshield Wiper/Washer Switch. The K9 Body Control Module provides a constant ground for the S82 Windshield Wiper/Washer Switch and monitors a signal circuit to determine the requested windshield wiper position.

When front washer operation is requested, the K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to enable the G24 Windshield Washer Pump through the KR11 Windshield Washer Pump Relay, as well as supply B+ to the M75 Windshield Wiper Motor for low speed wiper operation.

When rear washer operation is requested, the K9 Body Control Module will send a CAN message to the K219 Lighting Control Module to enable the G24 Windshield Washer Pump through the KR6 Rear Window Washer Pump Relay, as well as send a signal through LIN to the M45 Rear Wiper Motor for low speed wiper operation.

### K219 Lighting Control Module

The K219 Lighting Control Module controls B+ to the G24 Windshield Washer Pump. When washer operation is requested from a CAN message from the K9 Body Control Module, the K219 Lighting Control Module will apply voltage via a high side driver to the KR11 Windshield Washer Pump Relay or the KR6 Rear Window Washer Pump Relay. The K219 Lighting Control Module also controls B+ to the M75 Windshield Wiper Motor. When washer operation is requested, the K219 Lighting Control Module will apply voltage via a high side driver to the KR12B Windshield Wiper Relay.

The K219 Lighting Control Module also monitors the B118B Windshield Washer Fluid Level Switch through a discrete signal circuit.

### KR12B Windshield Wiper Relay

The KR12B Windshield Wiper Relay supplies B+ to the M75 Windshield Wiper Motor and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the M75 Windshield Wiper Motor through the KR12C Windshield Wiper Speed Control Relay, enabling wiper operation.

### KR6 Rear Window Washer Pump Relay

The KR6 Rear Window Washer Pump Relay supplies B+ to the G24 Windshield Washer Pump and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When washer operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the G24 Windshield Washer Pump, enabling washer pump operation.

### KR11 Windshield Washer Pump Relay

The KR11 Windshield Washer Pump Relay supplies B+ to the G24 Windshield Washer Pump and is controlled by the K219 Lighting Control Module. The coil side of the relay receives a constant chassis ground and the switch side receives a constant B+. When wiper operation is requested, the K219 Lighting Control Module will provide voltage to the coil side of the relay. This will energize the relay, closing the high current contact, and supply B+ to the G24 Windshield Washer Pump, enabling washer pump operation.

### G24 Windshield Washer Pump

The G24 Windshield Washer Pump is a reversible motor that receives a ground through the non activated relay. B+ is controlled by the KR11 Windshield Washer Pump Relay for front washer operation, or the KR6 Rear Window Washer Pump Relay for rear washer operation. With voltage applied, a DC motor spins, connecting and pressurizing washer fluid from the washer fluid reservoir. The pressurized washer fluid is deposited on the windshield or rear window through a series of lines and nozzles.

### M45 Rear Window Wiper Motor

The M45 Rear Wiper Motor communicates with the K9 Body Control Module via LIN and responds to requests to turn the rear wipers on and off. The M45 Rear Wiper Motor receives a constant B+ and chassis ground. In operation, the M45 Rear Wiper Motor monitors LIN messages to determine when washer operation is requested. The M45 Rear Wiper Motor will wipe at low speed when washer operation is requested.

The M45 Rear Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When washer operation is requested, the DC motor spins. When wiper operation is no longer required, the M45 Rear Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

### M75 Windshield Wiper Motor

The M75 Windshield Wiper Motor receives a constant chassis ground. B+ is controlled by the KR12B Windshield Wiper Relay and KR12C Windshield Wiper Speed Control Relay being operated by the K219 Lighting Control Module. The M75 Windshield Wiper Motor will wiper at low speed when washer operation is requested.

The M75 Windshield Wiper Motor includes a DC motor and an internal position switch to indicate the wiper park position. When wiper operation is requested, the DC motor spins. The spinning motor is directed to a wiping motion through the windshield wiper transmission. When wiper operation is no longer required, the M75 Windshield Wiper Motor will continue spinning until the internal position switch indicates it is in the park position.

**B118B Windshield Washer Fluid Level Switch**
The B118B Windshield Washer Fluid Level Switch receives a constant chassis ground. A signal circuit is monitored by the K219 Lighting Control Module. The K219 Lighting Control Module applies voltage to the signal circuit. When the B118B Windshield Washer Fluid Level Switch is closed, voltage on the signal circuit is pulled to ground, indicating fluid in the washer fluid reservoir.

# Section 3

# Brakes

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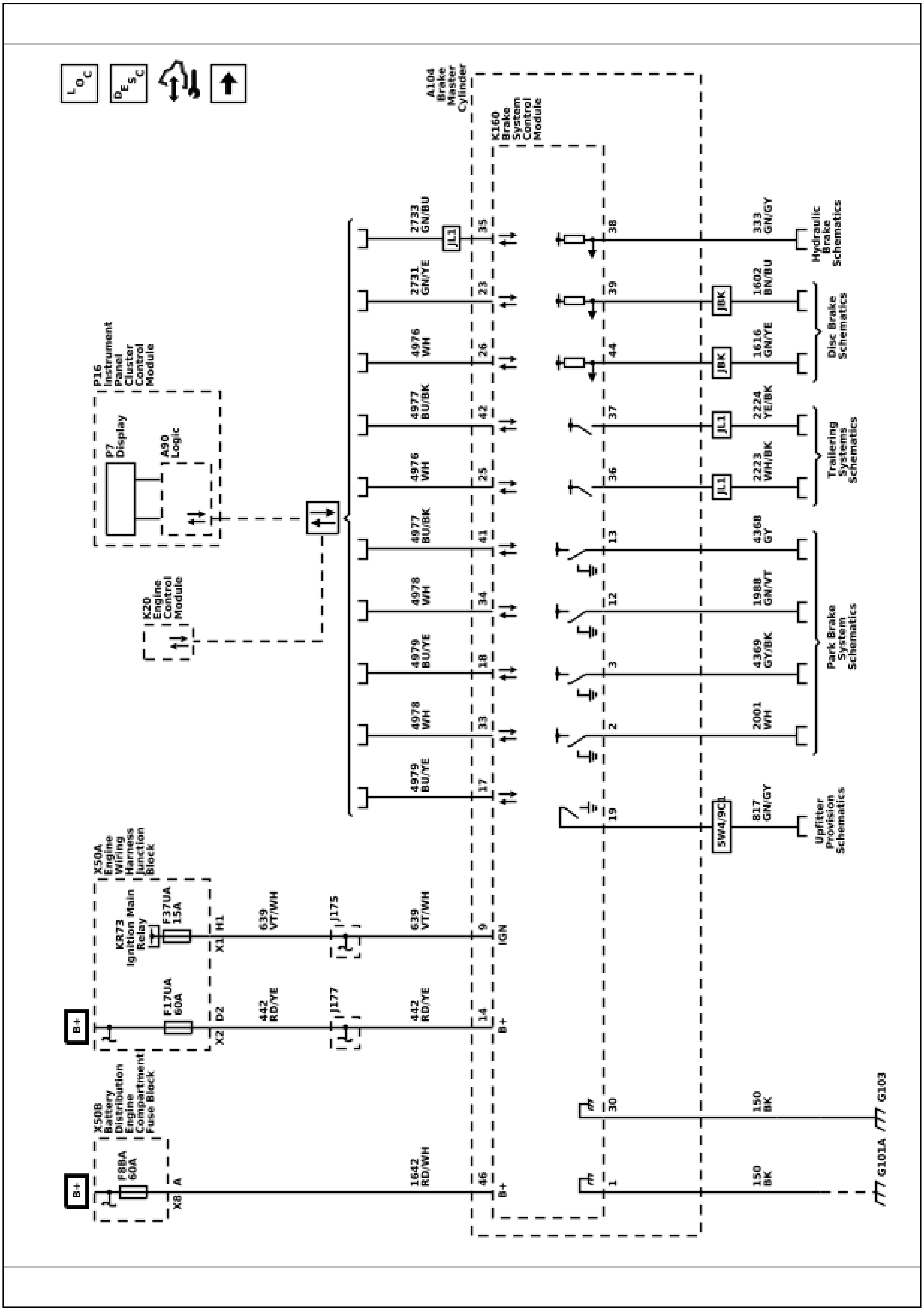
# Brakes

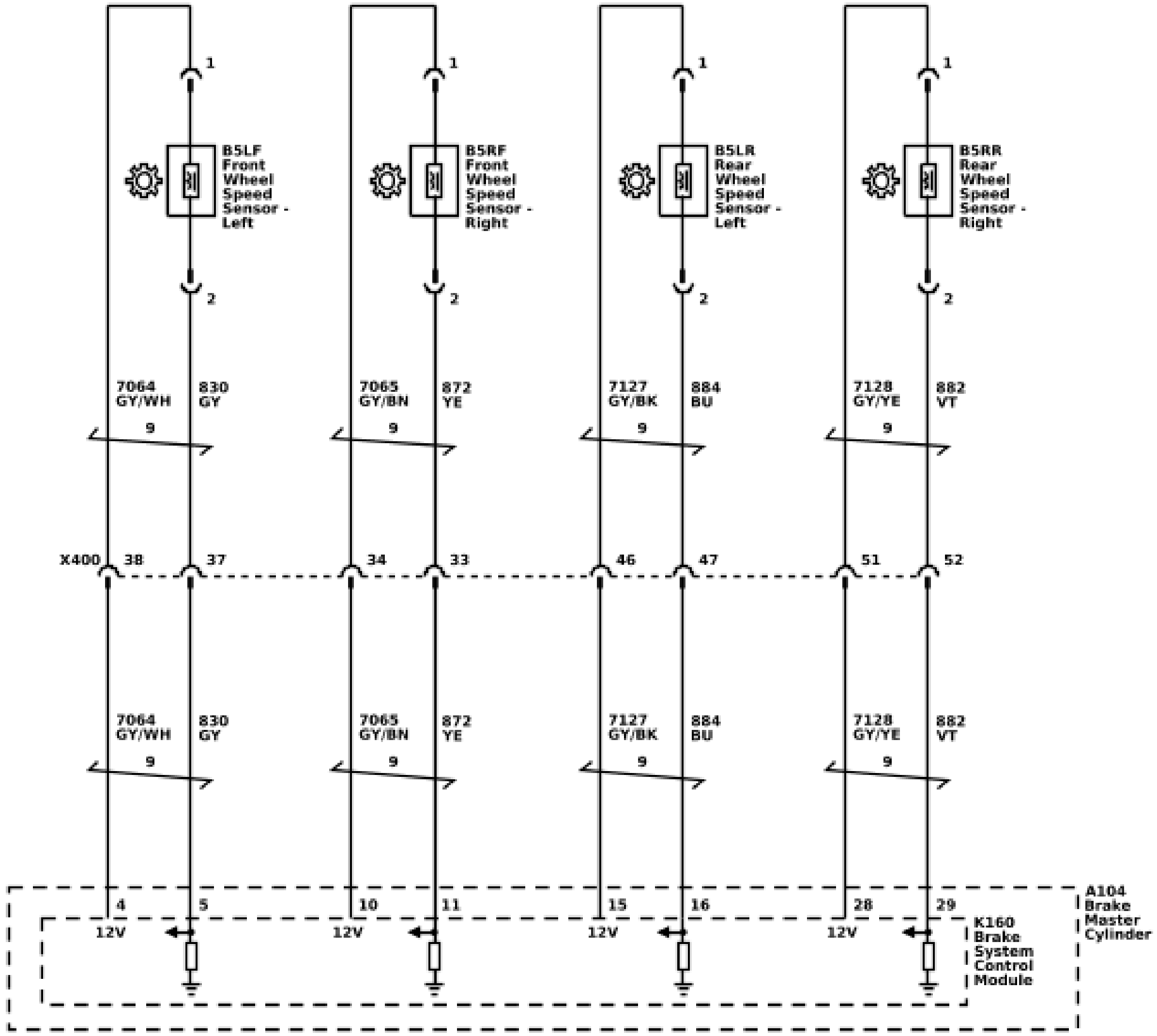
## Antilock Brake System

### Schematic and Routing Diagrams

## Antilock Brake System Schematics (Module Power, Ground, Serial Data, Indicators, and Subsystem References)


6885487
B+
X50B Battery Distribution Engine Compartment Fuse Block
F8BA 60A
X8 A
1642 RD/WH
46 B+
X50A Engine Wiring Harness Junction Block
F17UA 60A
X2 D2
442 RD/YE
J177
442 RD/YE
14 B+
KR73 Ignition Main Relay
F37UA 15A
X1 H1
639 VT/WH
J175
639 VT/WH
9 IGN
K20 Engine Control Module
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
4979 BU/YE 17
4978 WH 33
4979 BU/YE 18
4978 WH 34
4977 BU/BK 41
4976 WH 25
4977 BU/BK 42
4976 WH 26
2731 GN/YE 23
2733 GN/BU JL1 35
A104 Brake Master Cylinder
K160 Brake System Control Module
1 150 BK G101A
30 150 BK G103
19 5W4/9C 817 GN/GY Upfitter Provision Schematics
2 2001 WH
3 4369 GY/BK
12 1988 GN/VT
13 4368 GY
Park Brake System Schematics
36 JL1 2223 WH/BK
37 JL1 2224 YE/BK
Trailering Systems Schematics
44 JBK 1616 GN/YE
39 JBK 1602 BN/BU
Disc Brake Schematics
38 333 GN/GY
Hydraulic Brake Schematics

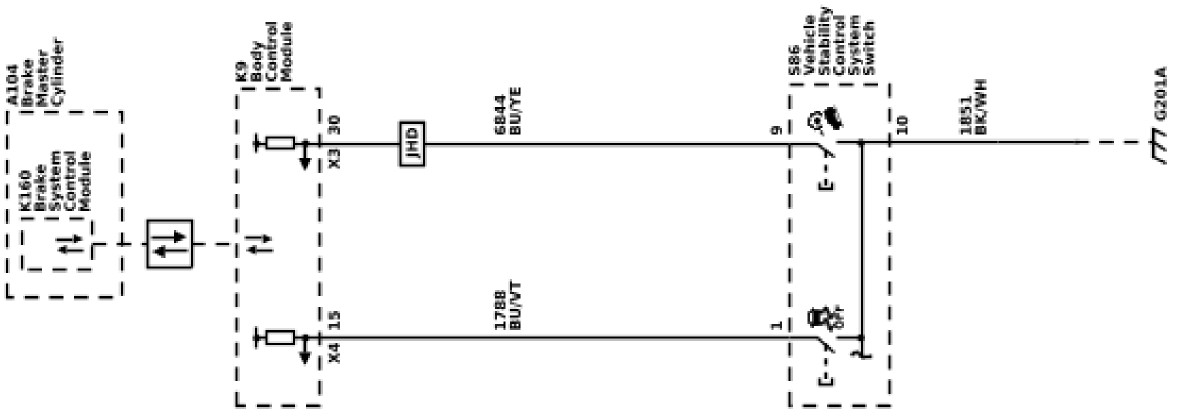
## Antilock Brake System Schematics (Wheel Speed Signals)


1
B5LF
Front
Wheel
Speed
Sensor -
Left
2
7064
GY/WH
830
GY
9
X400
38
37
7064
GY/WH
830
GY
9
4
5
12V
1
B5RF
Front
Wheel
Speed
Sensor -
Right
2
7065
GY/BN
872
YE
9
34
33
7065
GY/BN
872
YE
9
10
11
12V
1
B5LR
Rear
Wheel
Speed
Sensor -
Left
2
7127
GY/BK
884
BU
9
46
47
7127
GY/BK
884
BU
9
15
16
12V
1
B5RR
Rear
Wheel
Speed
Sensor -
Right
2
7128
GY/YE
882
VT
9
51
52
7128
GY/YE
882
VT
9
28
29
12V
K160
Brake
System
Control
Module
A104
Brake
Master
Cylinder

6885488

## Antilock Brake System Schematics (Traction and Hill Descent Controls)

6885489


A104 Brake Master Cylinder
K160 Brake System Control Module
K9 Body Control Module
X3 30
X4 15
JHD
6844 BU/YE
1788 BU/VT
S86 Vehicle Stability Control System Switch
9
1
10
1851 BK/WH
G201A

# Description and Operation

## ABS Description and Operation

### Description and Operation

This vehicle is equipped with a Integrated Brake Control (IBC), also known as Brake System Control Module.

The Integrated Brake Control is an electromechanical device that interprets and converts driver input and provides a corresponding hydraulic pressure output to activate a standard brake system according to the drivers demand. The electro-hydraulic boost system replaces the conventional vacuum-based power assist brake system, which provides an advantage in efficiency. The electro-hydraulic brake system supplies "on-demand" power when the driver presses the brake pedal. In an event of no electrical energy or failure condition the drivers input is mechanically converted to a hydraulic pressure output.

Depending on options, the following vehicle performance enhancement systems are provided.

- ABS
- Traction Control
- Stability Control
- Brake Pad Life Monitoring
- Dynamic Rear Proportioning
- Panic Brake Assist
- Teen Mode Support
- Trailer Sway Control
- Engine Drag Control
- Brake Drying/Cleaning
- Extended Hill Hold Start Assist
- Hill Descent Control
- Collision Imminent Braking
- Full Speed Range Adaptive Cruise Control Braking
- Trailer Brake Control
- Park Brake Control Motor on Caliper/Drum ( with Push/Push)
- Unidirectional WSS
- CAN messages:
  - Chassis System Total Brake Axle Torque
  - DIC message during ABS ( no pedal feedback)
  - Switch based ESC disable
  - Switch based Traction disable
  - ESC enable
  - OBDII - Rough Road Wheel Speed Usage

- The Body control module (BCM) monitors the brake pedal position sensor signal when the brake pedal is applied and sends a high speed serial data message to the Brake System Control Module indicating the brake pedal position.
- Instrument cluster - The instrument cluster displays the vehicle speed based on the information from the engine control module. The engine control module sends the vehicle speed information via a high speed serial data to the body control module. The body control module then sends the vehicle speed information via serial data to the instrument cluster in order to display the vehicle speed, either in kilometers or miles, based on the vehicle requirements.
- Multi-axis acceleration sensor - The yaw rate, lateral acceleration and longitudinal acceleration sensors are combined into one multi-axis acceleration sensor, internal to the inflatable restraint sensing and diagnostic module. The Brake System Control Module receives serial data message inputs from the yaw rate, lateral acceleration and longitudinal acceleration sensor and activates stability control and hill hold start assist function depending on multi-axis acceleration sensor input.
- Multifunction switch - The traction control switch is a multifunction momentary switch. The body control module monitors the signal circuit from the traction control switch and sends a high speed serial data message to the Brake System Control Module indicating the switch position. The traction control and stability control are manually disabled or enabled by pressing the traction control switch.
- Steering wheel angle sensor - The Brake System Control Module receives serial data message inputs from the steering angle sensor. The steering wheel angle sensor signal is used to calculate the intended driving direction. The steering wheel angle sensor is installed as an internal part of the power steering gear.
- Transmission control module - The Brake System Control Module receives high speed serial data message inputs from the transmission control module indicating the gear position of the transmission for hill start assist or hill hold functions.
- Wheel speed sensors – This vehicle is equipped with unique directional wheel speed sensors that can detect wheel direction as well as zero wheel speed. The wheel speed sensors are Active sensors that receive a 12 V power supply voltage from the Brake System Control Module and provide an output signal to the module. As the wheel spins, the wheel speed sensor sends the Brake System Control Module a DC square wave signal. The Brake System Control Module uses the

frequency of the square wave signal to calculate the wheel speed.

## Power-Up-Self Test

The Brake System Control Module is able to detect many malfunctions whenever the ignition is ON. However, certain failures cannot be detected unless active diagnostic tests are performed on the components. Shorted solenoid coil or motor windings, for example, cannot be detected until the components are commanded ON by the Brake System Control Module. Therefore, a power-up self-test is performed to verify correct operation of system components. The Brake System Control Module performs the first phase of the power-up self-test when the ignition is first turned ON. This phase consists of internal self-testing of the Brake System Control Module along with electrical checks of system sensors and circuits.

## Antilock Brake System (ABS) Features

The active control/modulation of brake fluid hydraulic modulates pressure to the front and/or rear brake corner subsystems (brake torque control) to preclude wheel lock-up and enhance tire-to-road longitudinal braking traction. Wheel lock-up (sliding wheel, not rolling wheel) occurs when the wheel brake torque exceeds the available tire-to-road traction. Avoidance of wheel lock-up provides the driver with the ability to maintain vehicle stability and steer-ability. Improved tire-to-road longitudinal braking traction minimizes vehicle stopping distance.

## Brake Assist Features

The Brake Assist provides additional brake pressure over the pressure provided by the conventional brake apply system.

### Panic Brake Assist

This feature will apply brakes more quickly when a panic brake situation is determined. Panic Brake Assist detects that the driver intent is to stop the vehicle as quickly as possible, but does not apply sufficient brake pressure to do so. The feature will detect the driver intent then actively apply brake pressure to maximum pressure, thus activating the ABS system and stopping the vehicle as quickly as possible.

### Hydraulic Fade Compensation

Based on a brake disc/pad temperature estimate, driver applied master cylinder pressure and vehicle deceleration rate, Hydraulic Fade Compensation will increase brake system pressure above driver applied brake pressure when the brake system determines a gross fade condition. The goal of providing additional brake system pressure is to reduce stopping distance during high deceleration requests from the driver. The driver will experience fading brakes while using low or medium brake pedal force application. The Hydraulic Fade Compensation will only activate during high brake pedal force application.

### Rear Brake Boost

The Rear Brake Boost function provides rear hydraulic brake assist to ensure that all four corners are achieving maximum braking during ABS. When vehicle loading is heavily rear axle biased the rear brakes may not utilize all of the available road adhesion. The hydraulic Rear Brake Boost feature is designed to provide additional pressure to the rear brakes when the front brakes ABS are activated and the rear wheels have low slip.

### Electronic Brake Pre-Fill

This feature is used to reduce the brake response time when the driver quickly releases the accelerator pedal. This will also be used to support the use of low drag calipers.

### Motor on Caliper Torque Overlay

This feature is used to reduce the driver's braking effort when in backup (no power) mode. Torque is applied with the Electric Park Brake motors on the front or rear calipers, preferably isolating that hydraulic circuit, to provide assist. When in this mode, the Electric Park Brake motors are controlled to apply torque in accordance with the driver's commanded deceleration, instead of clamping to a certain force.

## Electronic Stability Control (ESC) Features

### Roll Over Mitigation / Preemptive ESC

Using the standard ESC sensor set, Roll Over Mitigation will detect driving situations that could cause a vehicle rollover. After detection, ESC brake control will be modified to reduce the chance of vehicle rollover.

### Trailer Sway Control

Trailer Sway Control uses the ESC system to detect trailer instability and apply differential braking to dampen out trailer oscillation and instability. Trailer Sway Control will detect the vehicle dynamic characteristics associated with trailer sway and actuate the vehicle’s brakes and reduce engine torque, if required, to dampen or eliminate trailer oscillations. Trailer Sway Control shall recognize repeated trailer instability and communicate to the display device to warn a driver of unsafe trailer setup.

### Torque Vectoring by Brakes

Torque Vectoring by Brakes enhances vehicle agility by using active brake applies and engine torque requests to maximize traction on drive wheels. While cornering, brakes are applied to the inside drive wheels, thus allowing more torque to the outside wheels without slipping the inside wheels. Increasing the engine torque, above driver request, gives more torque to outer wheels. Torque Vectoring by Brakes is designed for all around performance, while this feature is solely designed for high cornering maneuvers.

**Flat Tire ESC Enable**
If flat tire is detected, ESC system shall not be allowed to be disabled by the driver (ESC shall be re-enabled if driver has already disabled). The traction control system will be allowed to be disabled by the driver.

**ESC Control With Vehicle Weight Estimation**
Brake System Control Module shall have the capability to estimate vehicle weight while the vehicle is being driven. This feature shall modify ESC control based on estimated vehicle weight when a compact spare tire is detected on the rear axle.

## Traction Control System (TCS) Features

**Vehicle Stuck Control**
The traction control system shall recognize a vehicle “stuck” condition by monitoring excessive wheel slip for greater than 5 seconds with a vehicle reference velocity of less than 3 kph. Once detected, TCS will allow additional wheel slip of 5% to “dig” the vehicle out. This feature does not guarantee the vehicle to get unstuck, only to assist the driver.

**Power Hop Control**
Power hop is defined as an oscillation of the driven wheels due to acceleration on high coefficient surfaces. This wheel oscillation causes the vehicle to bounce resulting in driver discomfort, failure of driveline components and potentially other damage to the vehicle. This feature will be detected using Wheel speed sensor signal when TCS is “ ON”. In case TCS is “ OFF”, Brake System Control Module and ECM will be required to mitigate power hop. If the vehicle is exhibiting this signature, the traction control system will attenuate power hop by reducing engine torque and applying brake pressure.

**Engine Drag Control**
This feature is designed to mitigate drop-throttle-oversteer/understeer.

On a rear-wheel-drive vehicle during maximum cornering while applying throttle, the vehicle could exhibit oversteer when the driver quickly releases the throttle. This feature will slowly reduce the engine torque in order to maintain vehicle stability.

The Enabling Conditions include: Engine is required to be running, Clutch is released for Manual Trans , Vehicle speed is above 18kph (12mph) and the Powertrain is engaged through fault message from ECM/TCM/PCM

**Enhanced Off Road Control (Rock Crawling)**
This feature is intended to maximize rock crawling capability while in Offroad mode or 4 Low transfer case mode**.** This feature shall be enabled when in Offroad mode (if available) or when transfer case is in 4 Low. The traction control calibration shall be biased towards low speed, active capability through the use of more brake control with less wheel slip.

## Brake System Control Module Features

### Brake Drying/Cleaning

Brake Drying/Cleaning autonomously applies a small amount of brake pressure during long driving on wet roads in order to remove water from the rotor surface. The brake application is unperceivable to the driver, but should result in improved brake feel and performance. Conditions to enable Brake Drying/Cleaning.

- Wipers need to be ON
- If Cruise is Active, Brake Drying/Cleaning will not function as minimum pedal position is required
- If driver brakes, the distance counter will be reset
- Brake pressure needs to build up to 3 bar at all 4 wheels

### Hill Start Assist

Hill Start Assist is a feature that will temporarily hold the vehicle while on a grade. This feature will hold the vehicle 2-5 seconds after the driver has removed their foot from brake pedal and the vehicle is on a grade exceeding 7%. The design is to prevent the vehicle from rolling down the hill before the driver has an opportunity to apply accelerator pedal. The brakes will automatically release when the accelerator pedal is applied. It will not activate if the vehicle is in a drive gear and facing downhill, or if the vehicle is facing uphill and in Reverse.

### Driveline Damping

Driveline Damping is required on vehicles with ESC, Stop/Start functionality and an automatic transmission. This feature holds brake pressure to dampen driveline acceleration disturbance as engine is restarted and holds brake pressure to retard or prevent the vehicle from rolling. It is used for driver comfort and has also been used to extend vehicle hold on a steep grade.

**Extended Hold Hill Start Assist**
Extended Hold Hill Start Assist will function the same as Hill Start Assist except there will be an indefinite vehicle hold instead of a temporary vehicle hold. The vehicle will be held by the Brake System Control Module for up to five minutes, and then will transfer the hold to Electronic Park Brake when necessary. This

feature is required for all Stop/Start variants to prevent vehicle rollback when the engine shuts off. All of the driver exit strategies of Hill Start Assist with Electronic Park Brake will also apply to this feature.

**Hill Descent Control**
Hill Descent Control provides autonomous braking when the vehicle is descending a very steep incline in either forward or reverse transmission gear. The grade activation minimum threshold is 10%. Typical vehicle speeds while using this feature are 5-30kph (6–19mph). This feature can provide convenience and comfort for steep offroad driving.

Hill Descent Control is enabled by the driver activating the Hill Descent Control switch at a vehicle speed below the maximum enabling vehicle speed.

Hill Descent Control is disabled if vehicle speed exceeds 60 km/h for 30 seconds or immediately if vehicle speed exceeds 80km/h. Cruise control will not be allowed to activate when Hill Descent Control is enabled by the driver.

**Automatic Vehicle Hold**
Automatic Vehicle Hold is a driver enabled feature that holds the vehicle at a standstill for an indefinite amount of time. This feature is similar to the Extended Hold Hill Start Assist except it will function on all road grades. It must be enabled by the driver and will revert to a disabled state upon key-up. The brake System Control Module will hold vehicle, then transfer hold to Electric Park Brake (EPB) when necessary.

The Automatic Vehicle function requires the vehicle to have an electronic parking brake which will allow the brake pressure hold time to increase up to 5 minutes before engaging the electronic park brake. Automatic Vehicle is available on vehicles with automatic transmissions and only available on vehicles with manual transmissions if equipped with a neutral gear position indicator (start/stop engines have neutral gear position indicator).

**Vehicle Moding**
The Brake System Control Module shall use ‘Driver Selected Mode Status signals to determine what mode the vehicle is in. The Brake System Control Module shall use the supported Driving modes to indicate to the customer what mode they are in. Mode 0 that is correspond to “ Tour or Normal” mode shall always be supported and will be considered the default. Other supported modes are: Sport, Offroad, Track, Snow/Ice and Tow Haul.

## Electric Park Brake Features

### Park Rollaway EPB Apply

This feature applies the EPB autonomously when vehicle motion is detected while in Park. The most likely scenario for activation of this feature is a vehicle on a split-mu grade and an open differential. The low mu wheel can spin in the opposite direction from the vehicle motion, and so the high mu wheel may allow the vehicle to roll. Applying the EPB to both rear wheels prevents vehicle motion by preventing the high mu wheels from rotating.

### Steep Grade Apply:

This feature autonomously applies the EPB when the vehicle is on a steep grade. The Steep Grade apply can be enabled if Park Rollaway Detection apply is enabled. It can also be enabled on its own.

## Interface with Other Features

The features set below are systems that will be controlled (to various degrees) by the Brake System Control Module by sending out performance requests to each system which should be arbitrated in the sub-system for execution. The idea is that the Brake System Control Module request should override normal sub-system control and these requests should not override diagnostic, failure, or other special or overriding control.

### Steering Torque Overlay (for both ABS and TCS)

This feature provides haptic feedback by increasing or decreasing steering assist to encourage appropriate course correction. This feature functions in combination with ESC or ABS

### 4WD Interface

Brake Controls send front and rear torque requests to the transfer case system while ABS/TCS/ESC is activating.

### 4WD w/4Low Interface

Brake Controls send front and rear torque requests to the transfer case system while ABS/TCS/ESC is activating

### Trailer Braking Control Interface

The Brake System Control Module shall be able to independently use the trailer brake activation request to stabilize and decelerate the vehicle**.** The Brake System Control Module can use Trailer Braking Force Output and Trailer Braking Gain Setting as feedback to know how much braking the Integrated Trailer Brake Control is currently doing

### Dynamic Braking with EPB

Dynamic Braking with EPB provides autonomous braking when the EPB switch is pressed when the vehicle is in motion. With the use of this feature, if the EPB switch is pressed while the vehicle is moving, the Brake System Control Module will apply braking at all 4 corners until the vehicle is stopped, then the EPB will apply and Brake System Control Module will release pressure.

### Electronic Transmission Range Select (ETRS) Autonomous Apply

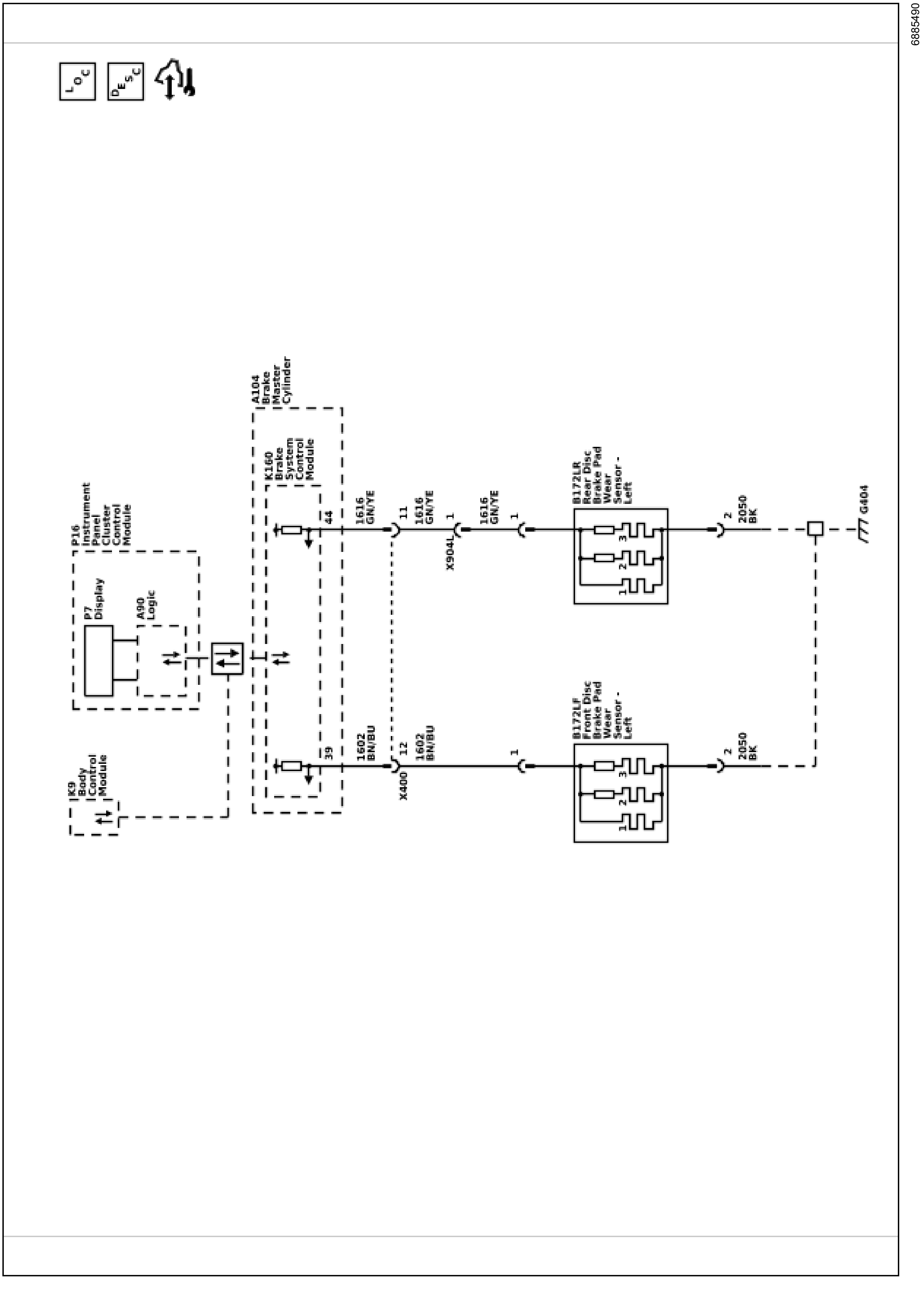
This feature applies brake pressure on a request from ETRS. This is done temporarily until the EPB can apply, using the ETRS EPB Apply feature.

The Brake Control System shall provide a short service brake hold to prevent the vehicle from rolling between when the ETRS commands a hold and the electronic park brake is applied. The primary purpose of the ETRS/Brakes interface is to apply the park brake when ETRS has a failure that prevents the transmission from achieving park; or if the driver shifts to park on a grade, EPB will reduce the load on the park pawl by applying (ETRS calculates and calibrates this grade).

# Disc Brakes

## Schematic and Routing Diagrams

## Disc Brake Schematics (Brake Pad Wear Sensors (JBK))


6885490
LOC
DESC
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
K9 Body Control Module
A104 Brake Master Cylinder
K160 Brake System Control Module
44
39
1616 GN/YE
1602 BN/BU
11
12
X400
1
X904L
B172LR Rear Disc Brake Pad Wear Sensor - Left
B172LF Front Disc Brake Pad Wear Sensor - Left
1
2
3
2050 BK
G404

# Description and Operation

## Brake Pad Life Monitoring Description and Operation

This vehicle has a system that estimates the remaining life of the front and rear brake pads. When the feature is active, brake pad life is displayed in the Driver Information Center (DIC) as a percentage.

When the system has determined that the brake pads need to be replaced, a message will display, which may include mileage remaining.

Customers can use this information to plan their vehicle maintenance. A prognostic indicator of life remaining, especially in distance remaining, enables customers to arrange brake pad replacement at a convenient time.

The system will display a percent pad life on the DIC at all time just like oil life monitoring. When you approach end of pad life, the messaging will change to a distance parameter (i.e. 2000 miles remaining, etc.) and it will start to actively remind the driver to take action at ignition cycle intervals.

If the feature has malfunctioned, fault messaging will be provided. The customer will be able to disable the feature display if desired, and the display will confirm this.

The Brake System Control Module has one signal input for a front axle brake pad wear sensor and one signal input for a rear axle brake pad wear sensor. The brake system control module supply voltage to the brake pad wear sensor and the sensor is grounded to the vehicle ground. The brake system control module diagnose any issues with the power supply for the sensors and set “ invalid” if there is a failure detected in the supply voltage system.

When the brake pads are new, the scan tool parameter Brake Pad Wear Sensors will be near 0 volts. The brake pad wear sensor consists of breakable wire resistors. As the brake pad sensor wears, it causes the breakable sensor wire resistors to wear away, causing the scan tool parameter Brake Pad Wear Sensors voltage to increase. The brake system algorithm along with the remaining wear sensors will determine the amount of wear and display this as a percentage of brake pad life remaining and is displayed on the DIC.

After replacing the brake pads, the Axle Brake Pad Life Monitor Reset Learn must be performed.

The brake pad life system can be turned off. This may be necessary if aftermarket brake pads without wear sensors are installed. When the system is turned off, the front and rear brake pad life percentages will not display.

## Disc Brake System Description and Operation

### System Component Description

The disc brake system consists of the following components:

**Disc Brake Pads: Applies mechanical output force from the hydraulic brake calipers to friction surfaces of brake rotors.**

**Disc Brake Rotors: Uses mechanical output force applied to friction surfaces from the disc brake pads to slow speed of tire and wheel assembly rotation.**

**Disc Brake Pad Hardware: Secures disc brake pads firmly in proper relationship to the hydraulic brake calipers. Enables a sliding motion of brake pads when mechanical output force is applied.**

**Disc Brake Caliper Hardware (Floating Caliper): Provides mounting for hydraulic brake caliper and secures the caliper firmly in proper relationship to caliper bracket. Enables a sliding motion of the brake caliper to the brake pads when mechanical output force is applied.**

### System Operation (Floating Caliper)

Mechanical output force is applied from the hydraulic brake caliper pistons to the inner brake pads. As the pistons press the inner brake pads outward, the caliper housings draw the outer brake pads inward. This allows the output force to be equally distributed. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of both the brake pad and brake caliper hardware is essential for even distribution of braking force.

### System Operation (Fixed Caliper)

Mechanical output force is applied from the hydraulic brake caliper inboard and outboard pistons to the inner and outer brake pads. The brake calipers are a fixed, opposed-piston design, allowing the output force to be equally distributed through the distribution of the pressurized brake fluid within the caliper. The brake pads apply the output force to the friction surfaces on both sides of the brake rotors, which slows the rotation of the tire and wheel assemblies. The correct function of the brake pad hardware and of the brake caliper inboard and outboard pistons is essential for even distribution of braking force.

### System Characteristics

**Brake Noise**

Brake noise can occur and to a degree, some brake noise is normal. Variations in driving conditions such as the weather, environment, driving patterns, differences in vehicle loading, and type or style of driving, can affect brake wear. Any one of these variations can cause brake noise to become apparent. Inspect and verify that all metal-to-metal contact areas of the brake pads, brake pad guides or springs, brake caliper housing, caliper bracket and/or suspension knuckle, as applicable, are clean and free of corrosion and scale.

Brake noise is a “slip-stick” vibration of disc brake components and, if it occurs intermittently, can be considered normal. Most brake noise may be eliminated or temporarily reduced by performing 3 or 4 aggressive brake applications. If the brake noise persists or consistently recurs, application of a damping compound to the brake pad mounting plate where it contacts the caliper can lessen the vibration as the components move relative to each other. Refer to [Link target (target-id 176959-) not found] in this section for recommended compounds.

The following brake noises are characteristic of all brake systems. These noises cannot be avoided, and may not indicate improper operation of the brake system.

**Squeak/Squeal Noise**
A squeak or squeal noise can occur on vehicles with front semi-metalic brake pads during light to medium brake pedal application at low to moderate vehicle speeds. Occasionally this noise may appear from the front or rear brakes after a period of non-use such as overnight, or cold brakes and/or in high humidity conditions.

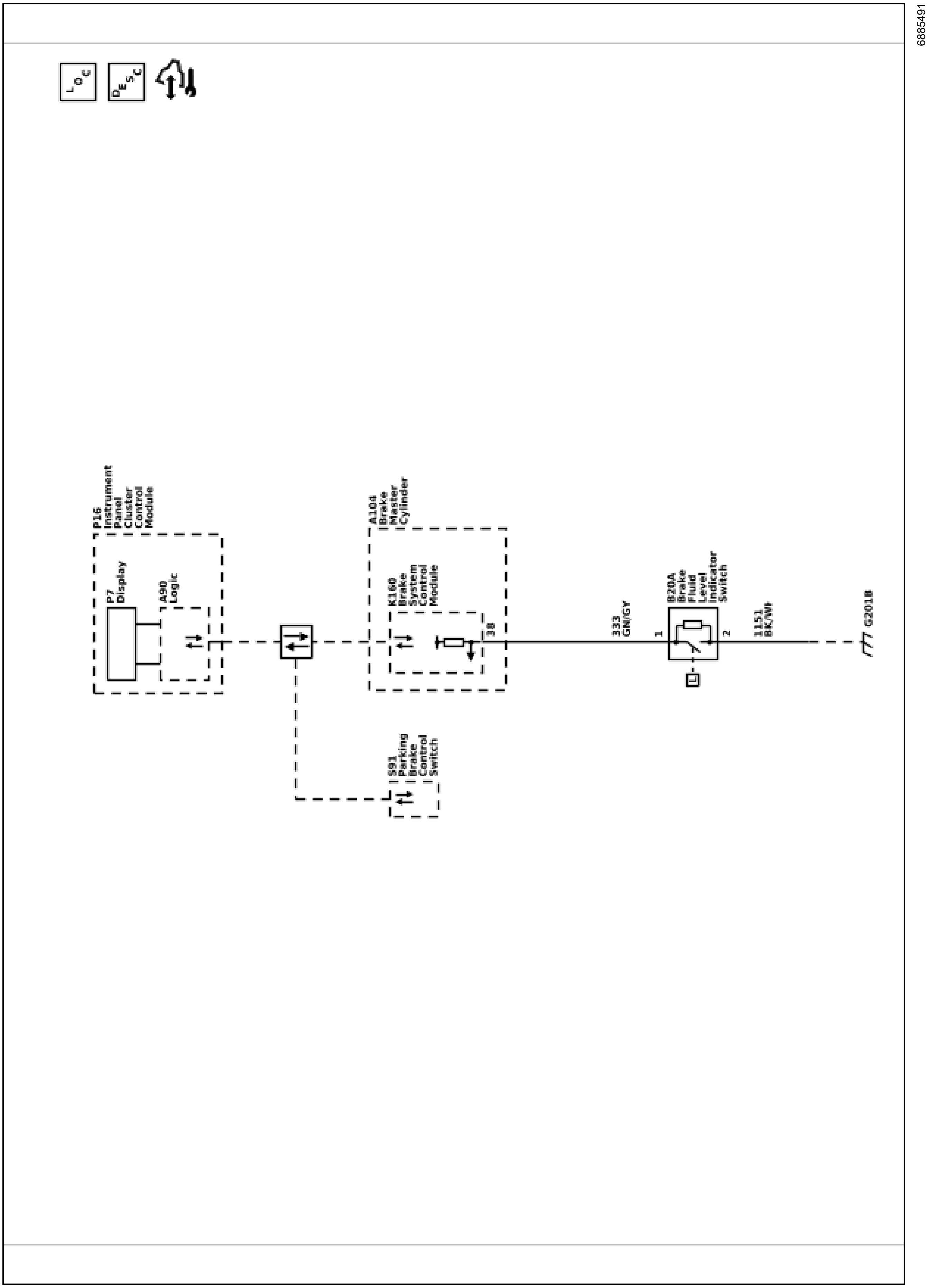
**Grinding Noise**
Common occurrence for rear brakes and some front disc brakes during initial brake applications after the vehicle has been parked overnight. Caused by light corrosion forming on the metal brake component friction surfaces during vehicle non-use. Typically disappears after the first few brake applications.

**Groan Noise**
A groan type noise may be heard during a quick stop, or when slowly moving forward from a complete stop. On vehicles equipped with antilock brake systems (ABS), a groan or moan noise may occur during heavy brake application or on road surfaces with compromised traction such as loose gravel, or on wet or icy roads. This is a normal function of ABS activation.

# Hydraulic Brakes

## Schematic and Routing Diagrams

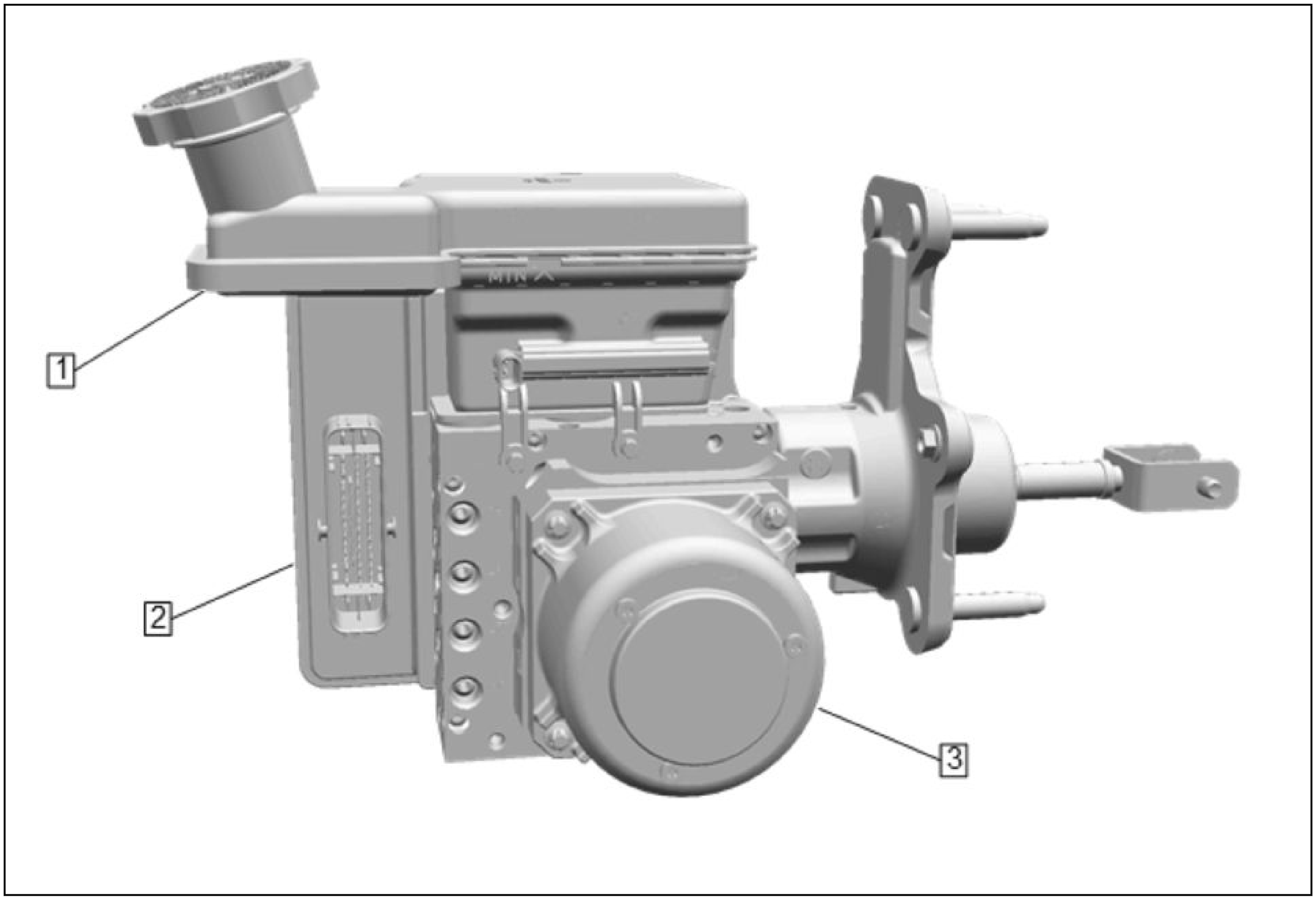
## Hydraulic Brake Schematics (Hydraulic Brakes)


6885491
LOC
DESC
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
A104 Brake Master Cylinder
K160 Brake System Control Module
38
333 GN/GY
1
B20A Brake Fluid Level Indicator Switch
2
1151 BK/WH
G2018
S91 Parking Brake Control Switch

# Description and Operation

## Brake Assist System Description and Operation

### System Component Description



5039052

**Note:** The above graphic may not be an exact representation for every vehicle configuration.

The brake assist system is an electro - hydraulic brake booster that replaces a vacuum booster including its vacuum supply. The brake booster unit takes the driver applied brake demand and transforms this into an amplified brake pressure and does not rely on vacuum to function. The brake booster unit is designed to operate together with an electronic stability control module which is normally responsible for ABS, traction control and stability control.

The master cylinder and power brake booster unit consists of a brake master cylinder reservoir (1), an electronic brake booster control module (2), pedal coupling unit/pushrod, and the brake master cylinder (3) with integrated brake pressure modulator valve.

### System Operation

Brake system input force is multiplied by the brake pedal and transferred by the pedal pushrod to the hydraulic brake master cylinder. Effort required to apply the brake system is reduced by the electronic brake booster.

### Shutdown Test

The brake master cylinder performs a self-test 2 minutes after ignition off. The self-test consists of an internal hydraulic test of the brake master cylinder and an external hydraulic compliance test and hydraulic leak test of the brake lines and calipers. The brake master cylinder will take the appropriate actions based on the test results at the next startup. The self-test will not run again until the vehicle has been driven 0.804 Km (0.5 mile), 40.23 kph (25 mph) minimum.

## Brake Assist System Description and Operation

| Brake Assist Operating Mode | Description | Vehicle Braking Behavior | Vehicle Speed limited to XXX kph/mph | Red Brake Telltale | DIC | Other Displays |
|---|---|---|---|---|---|---|
| Full Brake Assist | • - Normal hydraulic brake assist.<br>• - Brake pedal travel and force (pressure) measured.<br>• - Pedal feel indicates the relation of the pedal travel to the pedal force.<br>• - Brake system applies brake pressure to the wheels to achieve deceleration that makes driver effort comfortable. | • - Pedal feel: Normal (force to travel of brake pedal).<br>• - Brake pedal effort to decel: Normal.<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | No | No | None | None |
| Full Brake Assist with warning | • - Normal hydraulic brake assist.<br>• - Driver warned with DIC message only of detected failure.<br>• - There may be a small brake assist or pedal feel degradation depending on if/where the air is in the system or what component is overheated. | • - Pedal feel: Normal.<br>• - Brake pedal effort to deceleration: Normal.<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | No | No | Service Brake Assist | None |

| Brake Assist Operating Mode | Description | Vehicle Braking Behavior | Vehicle Speed limited to XXX kph/mph | Red Brake Telltale | DIC | Other Displays |
|---|---|---|---|---|---|---|
| Reduced Brake Assist | • - Normal hydraulic brake assist available<br>• - Driver warned with DIC message but due to nature of failure, engineering determined more warning needed.<br>• - Brake assist gain reduced in a noticeable fashion at low pedal travel (not alarming).<br>• - Full braking available as pedal is depressed further. | • - Pedal feel: Normal<br>• - Brake Pedal effort to decel: More effort required for low decel values (noticeable). Full braking capability for increased effort.<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | No | No | Service Brake Assist | None |
| Reduced Brake Assist | • - Normal hydraulic brake assist on 2 wheels.<br>• - Performed when brake system detects and isolates a leak in one of the two brake circuits. | • - Pedal feel: Normal.<br>• - Brake pedal effort to deceleration: Same deceleration requires double the effort. Can only achieve 50% deceleration.<br>• - Vehicle will pull slightly to the side with the Front Brake active.<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | Yes | Yes | Brake System Failure<br>XXX kph/mph Top Speed Low Brake Fluid (Potentially) | ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM |
| Two Wheel Brake Assist | • - Normal hydraulic brake assist on 2 wheels.<br>• - Performed when brake system detects and isolates a leak in one of the two brake circuits. | • - Pedal feel: Normal.<br>• - Brake pedal effort to deceleration: Same deceleration requires double the effort. Can only achieve 50% deceleration.<br>• - Vehicle will pull slightly to the side with the Front Brake active.<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | Yes | Yes | Brake System Failure<br>XXX kph/mph Top Speed Low Brake Fluid (Potentially) | ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM |

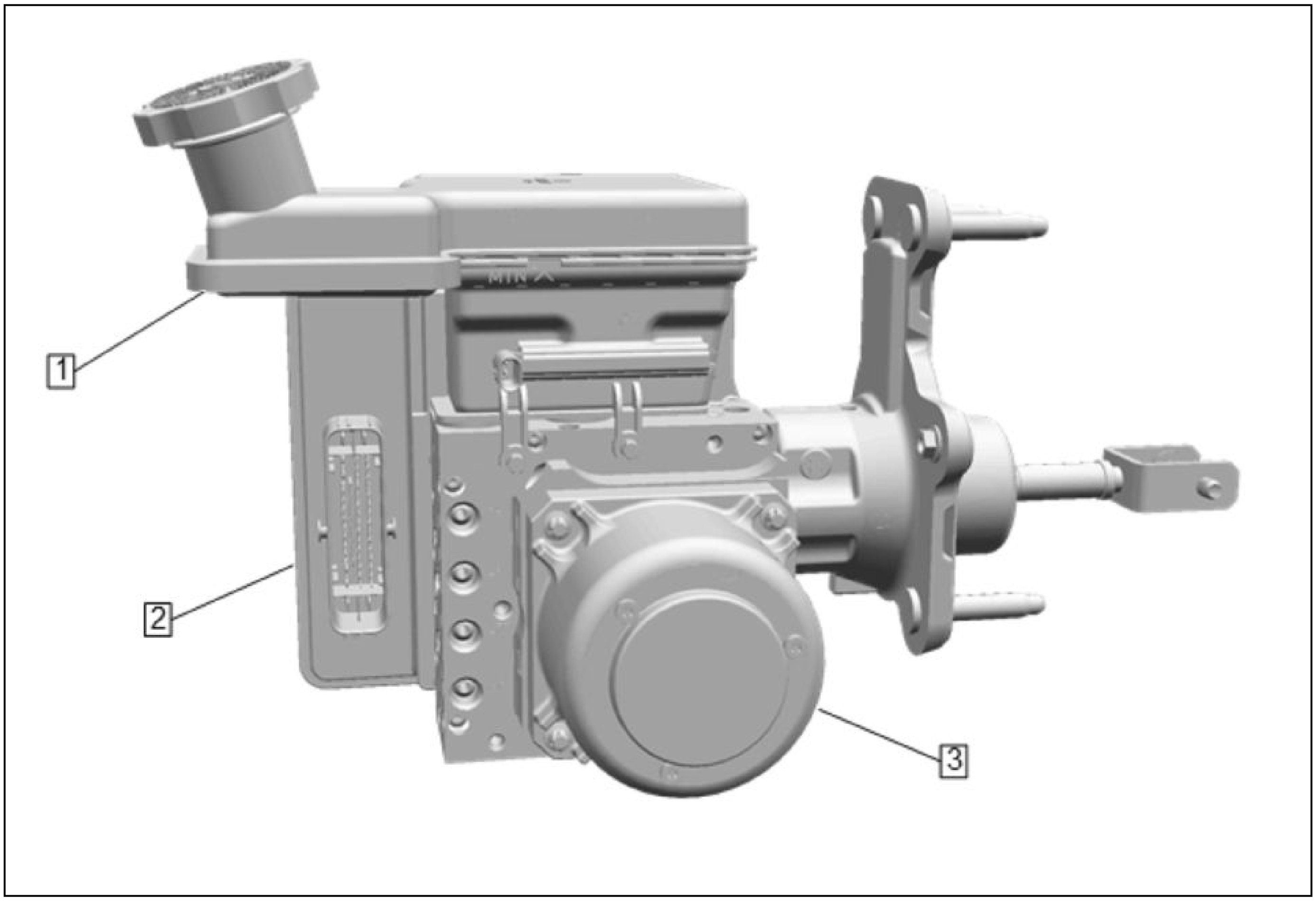
| Brake Assist Operating Mode | Description | Vehicle Braking Behavior | Vehicle Speed limited to XXX kph/mph | Red Brake Telltale | DIC | Other Displays |
|---|---|---|---|---|---|---|
| No Brake Assist with Electric Park Brake Assist | • - Hydraulic brake assist not available.<br>• - Brake System uses Electric Park Brake to assist driver braking. | • - Pedal feel: Slightly stiffer than normal.<br>• - Brake pedal effort to deceleration: Onset of braking is similar but more force required to achieve same deceleration compared with Full Brake Assist.<br>• - Minimal non linearities in deceleration due to use of Electric Park Brake.<br>• - Pedal travel's almost to the floor with high effort. | Yes | Yes | Brake System Failure<br>XXX kph/mph Top Speed | ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM |
| No Brake Assist (Push Thru) | • - No hydraulic or Electric Park brake assist available.<br>• - Driver pedal force distributes equal pressure to all 4 wheels | • - Pedal feel: Slightly softer than normal.<br>• - Brake pedal effort to deceleration: Onset of braking requires more travel AND more force required to achieve same deceleration compared with No Brake Assist with Electric Park Brake Assist.<br>• - Pedal Travel's almost to the floor with high effort. | Yes | Yes | Brake System Failure<br>XXX kph/mph Top Speed (Not displayed for full power loss or critical micro failures) | ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM |
| Two Wheel No Brake Assist (2 Wheel Push Thru) | • - Hydraulic brake assist not available.<br>• - Brake system applies and releases Electric Park Brake proportional to driver pedal force to assist driver braking. | • - Pedal feel: Significantly softer than normal.<br>• - Brake Pedal effort to deceleration: Onset of braking requires more travel AND more force required to achieve same deceleration compared with No Brake Assist.<br>• - Vehicle will pull slightly to the side with the Front Brake active.<br>• - Pedal Travel's almost to the floor with high effort. | Yes | Yes | Brake System Failure<br>XXX kph/mph Top Speed | ABS, ESC, and Engine Telltales Service Traction and ESC DIC Vehicle Speed Limited display from ECM |

| Brake Assist Operating Mode | Description | Vehicle Braking Behavior | Vehicle Speed limited to XXX kph/mph | Red Brake Telltale | DIC | Other Displays |
|---|---|---|---|---|---|---|
| Brake Fade Detected Level 1 | • - Normal hydraulic brake assist available.<br>• - Brakes system estimates brake temps of 500 - 600 deg C.<br>• - Driver warned with DIC display.<br>• - Brake assist gain reduced in a noticeable fashion at low pedal travel (not alarming).<br>• - If brake assist gain was not changed, the brake overtemp would not be as noticeable as on vacuum brake system. | • - Pedal feel: Normal<br>• - Brake Pedal effort to deceleration: Not significantly changed<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | No | No | Reduce Braking to Avoid Overheating | None |
| Brake Fade Detected Level 2 | • - Same as Level 1 but brake temperature 700 - 900 deg C.<br>• - Degradation in brake lining output may become noticeable.<br>• - Degradation in response time may become noticeable.<br>• - Far better performance than a vacuum system. | • - Pedal feel: Normal.<br>• - Brake Pedal effort to deceleration: Increase in effort required based on temperature of brake which decreases brake pad output.<br>• - Pedal Travel restricted to 80 mm due to pedal simulator. | Yes | Yes | Brakes Overheated Service Now | None |

## Hydraulic Brake System Description and Operation

### System Component Description

The hydraulic brake system consists of the following:

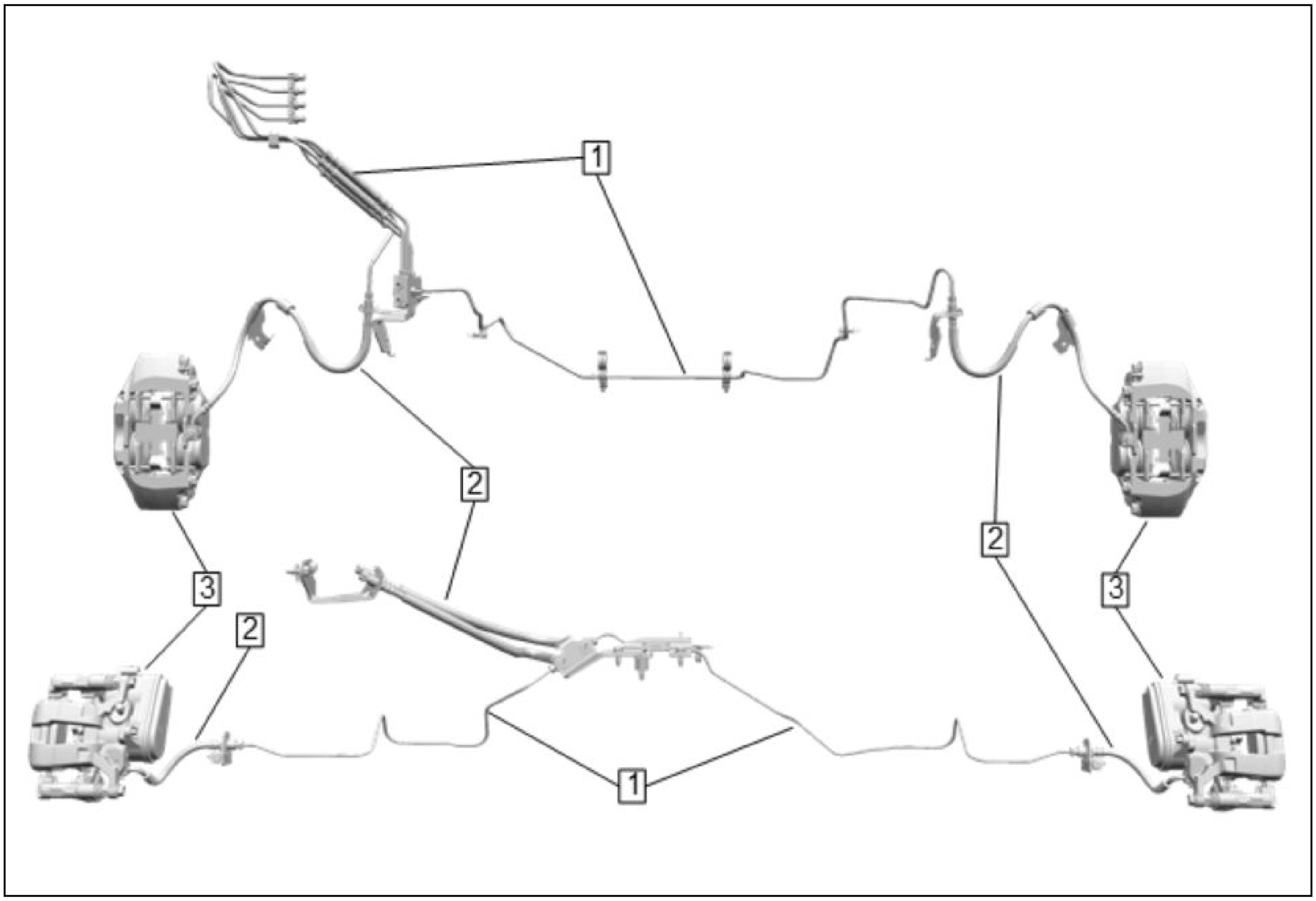


5039052

**Note:** The above graphic may not be an exact representation for every vehicle configuration.

**Brake Master Cylinder Fluid Reservoir (1): Contains supply of brake fluid for the hydraulic brake system.**

**Electronic Brake Booster Control Module (2) and Brake Master Cylinder (3): The brake master cylinder and the electronic brake booster control module take the driver applied brake demand and transforms this into an amplified brake pressure. The integrated brake pressure modulator valve controls hydraulic pressure to each wheel independently and can be responsible for ABS, traction control, and stability control.**



5039057

**Note:** The above graphic may not be an exact representation for every vehicle configuration.

**Hydraulic Brake Pipes (1) and Flexible Brake Hoses (2): Carries brake fluid to and from hydraulic brake system components.**

**Brake Calipers (3): Converts hydraulic input pressure into mechanical output force.**

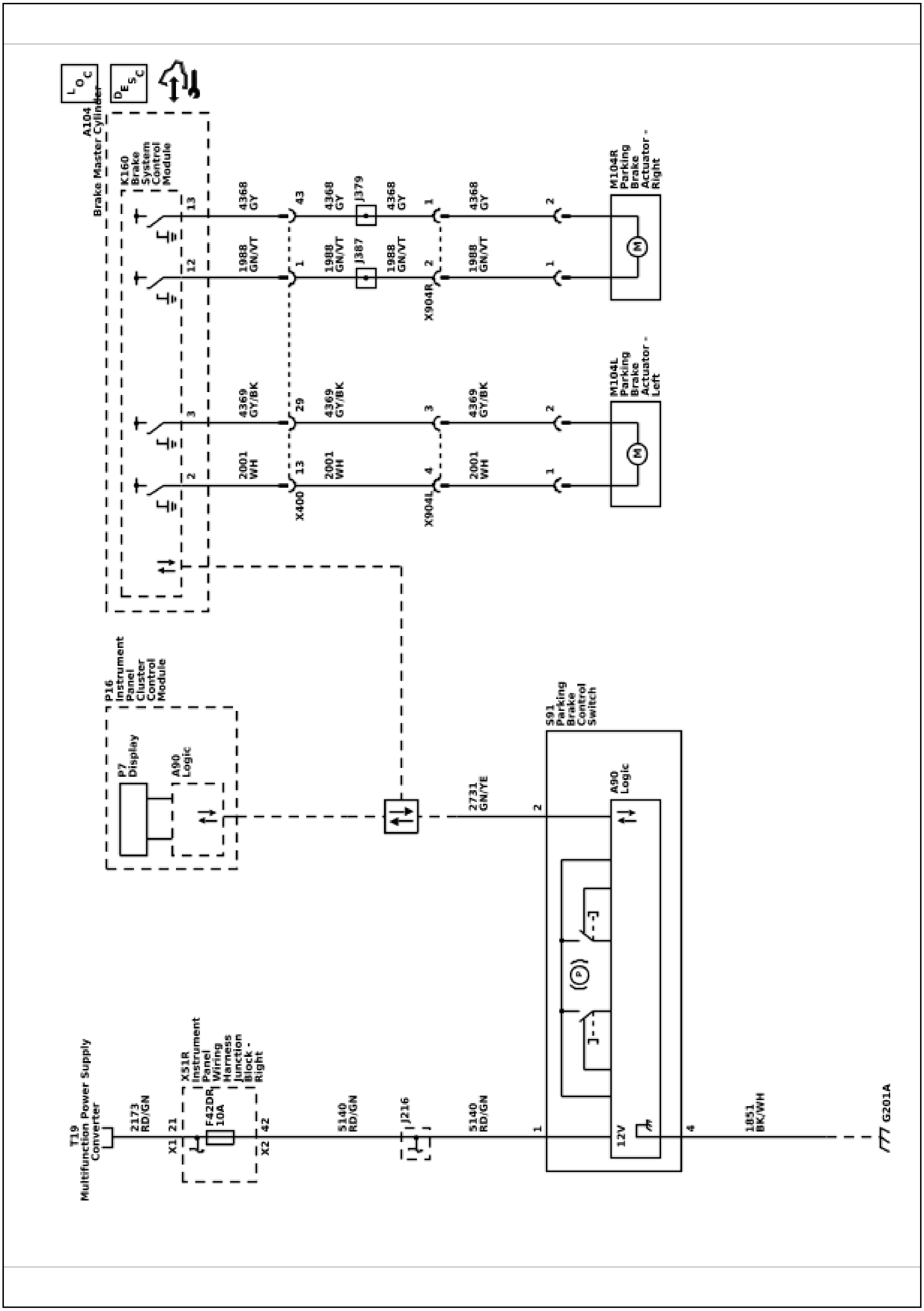
## System Operation

Mechanical force is converted into hydraulic pressure by the master cylinder, regulated to meet braking system demands by the pressure balance control system, and delivered to the hydraulic brake wheel circuits by the pipes and flexible hoses. The wheel apply components then convert the hydraulic pressure back into mechanical force which presses linings against rotating brake system components.

# Park Brake

## Schematic and Routing Diagrams

## Park Brake System Schematics (Park Brake System Schematics)


6885492
A104
Brake Master Cylinder
K160
Brake
System
Control
Module
13
12
3
2
4368
GY
1988
GN/VT
4369
GY/BK
2001
WH
43
1
29
13
X400
J379
J387
1
2
3
4
X904R
X904L
2
1
2
1
M104R
Parking
Brake
Actuator -
Right
M104L
Parking
Brake
Actuator -
Left
M
P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
2731
GN/YE
2
S91
Parking
Brake
Control
Switch
A90
Logic
P
T19
Multifunction Power Supply
Converter
2173
RD/GN
X1
21
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F42DR
10A
X2
42
5140
RD/GN
J216
5140
RD/GN
1
12V
4
1851
BK/WH
G201A

# Description and Operation

## Electronic Parking Brake Description

Vehicles with the electric parking brake have a switch in the center console or on the dash, which takes the place of the manual parking brake system, the foot pedal and release handle. In case of insufficient electrical power, the electric parking brake cannot be applied or released.

## Electronic Brake Control Module/Brake System Control Module

The parking brake function is integrated into the Electronic Brake Control Module/Brake System Control Module. The module contains the logic for applying and releasing the parking brake when commanded by the Park Brake Switch.

When the Park Brake Switch is pulled, a signal is sent to the Electronic Brake Control Module/Brake System Control Module which will supply 12 V to the apply control circuits and ground to the release control circuits which will cause the left and right park brake actuators to activate causing the park brakes to engage. When the Park Brake Switch is pressed, a signal is sent to the Electronic Brake Control Module/ Brake System Control Module which will supply 12 V to the released control circuits and ground to the apply control circuits which will cause the left and right park brake actuators to activate causing the park brakes to release. In some vehicles, the Park Brake Switch is a push-button style switch. When the switch is pressed, the park brakes are commanded to either apply or release based off of their current position.

The Electronic Brake Control Module/Brake System Control Module will diagnose the park brake motor circuits to verify that they are functioning properly. The park brake motor circuits are used to command actuator motor operation, which will apply and release the parking brake. These circuits are used to activate the actuator, which applies or releases pressure on the caliper pistons, ultimately applying and releasing the park brake.

The Park Brake Motor Position Sensor is an internal sensor to the park brake actuator. This sensor is used to monitor the park brake motor position.

## Electric Parking Brake Apply

The electric parking brake can be applied any time the vehicle is stopped or in motion. The electric parking brake is applied by momentarily operating the park brake control switch. The red park brake light will momentarily flash while the parking brake is being applied. Once fully applied, the red park brake light will turn on. If the electric parking brake is applied while the vehicle is in motion, the vehicle will decelerate as long as the switch is being operated. If the switch is operated until the vehicle comes to a stop, the park brake will remain applied.

If the red park brake light is flashing, the electric parking brake is only partially applied or released, or there is a problem with the electric parking brake. A DIC message will display.

The vehicle may automatically apply the electric parking brake in some situations when the vehicle is not moving. This is normal, and is done to periodically check the correct operation of the electric parking brake system.

## Electric Parking Brake Release

To release the electric parking brake, turn the ignition switch to the ON or RUN position, apply, and hold the brake pedal, and push down momentarily on the park brake control switch. When the electric parking brake is released the red park brake light turns off.

## Automatic Electric Parking Brake Release

The parking brake will automatically release if the vehicle is running, placed into gear, and an attempt is made to drive away. Avoid rapid acceleration when the parking brake is applied to preserve parking brake lining life.

## Section 4

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# Diagnostic Overview, Starting Point, and Programming

## Programming and Setup

## Diagnostic Information and Procedures

## Repair Instructions

### A11 Radio: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Check the 12–volt battery with a digital multimeter and ensure the voltage is above 12.5 volts. Install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

- Check for Preliminary information or Technical Service bulletins before programming.
- During programming you may be required to select multiple calibrations depending upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- If Vehicle Wide Programming is available, USB file transfer may not be required, depending on the current software level, or the release of updates.
- Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.
- The vehicle can be moved to an alternate location when performing the USB portion of the programming steps which could allow the possibility of working on another vehicle while the USB programming event is taking place.
- When transferring a large file (>1GB) from the Techline Connect server to the PC then to a USB stick, below are some useful tips:
  - A wired connection to the network is the quickest, most stable way to download the file.
  - Wireless connections can be used, however slower connection speeds may increase the likelihood of errors to occur during file download.
  - Once the file is downloaded to the PC, it will reside in cache unless the cache is cleared. Any additional USB sticks made from that PC will be copied from cache and take a much shorter time compared to downloading from the server.
  - Never take a USB stick directly to a vehicle for updating without starting a Techline Connect session for that particular VIN. If software is already on the stick, Techline Connect will take only seconds to confirm software on the stick is the latest and correct for that vehicle. Failure to perform this step will result in no warranty claim code indicating a USB programming event was completed.
- The display may go black several times during the programming event.

### Reference Information

**Special Tools**

- Use a USB C type flash drive for the vehicle, it is not recommended to use an adapter as this may cause the programming event to fail.
- USB 3.0 & above with NTFS format.
- Minimum size 32GB.
- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

### Reprogram Control Module

To program an existing control module, perform the following procedure:

**Note:** The vehicle must remain in PARK and the driver's door closed during the programming procedure.

1. Before proceeding with Prepare for Delta Programming/USB File Transfer in SPS check for any Info Sys OTA updates under Settings>Updates on the vehicles infotainment screen. If an update is available, it is more efficient to install the OTA update. If the OTA will not install and Delta/USB programming is necessary, then before attempting Delta/USB programming you should first decline the update by selecting Details and then the Decline Update option, followed by confirming the Decline Update. If an Info Sys OTA update is not available, proceed with Delta/USB programming.

**Note:** For instructions on passive power moding, refer to *Power Mode Description and Operation 9-1064*

2. Ignition/vehicle OFF
3. On the SPS Supported Controllers screen, select A11 Radio – Prepare for Delta Programming/USB File Transfer and follow the on–screen instructions.
   - 3.1. If Prepare for Delta Programming/USB File Transfer Indicates “Please perform USB File Transfer.”
   - 3.2. Connect a USB drive to the computer.
   - 3.3. Perform a Quick Format on the USB drive to NTFS.

**Note:** If USB File Transfer is blocked, the software is the latest version. Programming is complete. Proceed to step 3.13

   - 3.4. On the SPS Supported Controllers screen, select A11 Radio – USB File Transfer and follow the on–screen instructions.
   - 3.5. Upon completion of the file transfer, properly eject the USB drive from the computer.
   - 3.6. Ignition ON, infotainment system ON

**Note:** This step is not required and only needed when the radio screen is blank and monitoring USB update status is desired.

   - 3.7. On the SPS Supported Controllers screen, select A11 Radio – USB File Download Status. This shows the status of the USB update on the SPS screen as the radio screen may go black during the update process.
   - 3.8. Connect the USB drive to the USB port in the vehicle.
   - 3.9. The infotainment system will recognize that updated files are available. Follow the infotainment display on-screen instructions and select Update when prompted. If no instructions immediately appear on the infotainment display, select the following menu options:
     - Home
     - Settings
     - System
     - Updates

**Note:**

- If you receive an Update Failed screen, remove the USB, turn the vehicle OFF, and return to step 3.6. The update should continue where it stopped.
- The radio may display “Recovery Mode. Please Calibrate Device.”

   - 3.10. Upon completion of programming, remove the USB drive.

**Note:** Programming will automatically turn the vehicle OFF.

   - 3.11. On the SPS Supported Controllers screen, select A11 Radio – Programming and then follow the on-screen instructions.
   - 3.12. Return to step 2 to continue updating the radio until step 3.4 on-screen instruction blocks USB File Transfer
   - 3.13. Clear DTCs.
   - 3.14. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

4. If Prepare for Delta Programming/USB File Transfer indicates “Please perform Vehicle Wide Programming” refer to Vehicle Wide Programming and Setup *Vehicle Wide Programming and Setup 4-55*

**Note:** If Vehicle Wide Programming fails or is unavailable, please return to step 3 and perform “USB File Transfer.”

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

**Note:** The vehicle must remain in PARK and the driver’s door closed during the programming procedure.

**Note:** For instructions on passive power moding, refer to *Power Mode Description and Operation 9-1064*

1. Ignition/vehicle OFF
2. On the SPS Supported Controllers screen, select A11 Radio – Prepare for Delta Programming/USB File Transfer and follow the on–screen instructions.
3. If Prepare for Delta Programming/USB File Transfer Indicates “Please perform USB File Transfer.”
   - 3.1. Perform the Serial Data Authentication Configuration.
   - 3.2. Connect a USB drive to the computer.

3.3. Perform a Quick Format on the USB drive to NTFS.

**Note:** If USB File Transfer is blocked, the software is the latest version. Programming is complete. Proceed to step 3.13

3.4. On the SPS Supported Controllers screen, select A11 Radio – USB File Transfer and follow the on–screen instructions.

3.5. Upon completion of the file transfer, properly eject the USB drive from the computer.

3.6. Ignition ON, infotainment system ON

**Note:** This step is not required and only needed when the radio screen is blank and monitoring USB update status is desired.

3.7. On the SPS Supported Controllers screen, select A11 Radio – USB File Download Status. This shows the status of the USB update on the SPS screen as the radio screen may go black during the update process.

3.8. Connect the USB drive to the USB port in the vehicle.

3.9. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. If no instructions immediately appear on the infotainment display, select the following menu options:

- Home
- Settings
- System
- Updates

**Note:**

- If you receive an Update Failed screen, remove the USB, turn the vehicle OFF, and return to step 3.6. The update should continue where it stopped.
- The radio may display “Recovery Mode. Please Calibrate Device.”

3.10. Upon completion of programming, remove the USB drive.

**Note:** Programming will automatically turn the vehicle OFF.

3.11. On the SPS Supported Controllers screen, select A11 Radio – Programming and then follow the on-screen instructions.

3.12. Return to step 1 to continue updating the radio until step 3.4 on-screen instruction blocks USB File Transfer

**Note:** If Setup fails, check for DTC U1962. If this DTC is set, perform the Serial Data Authentication Configuration. Then clear the DTC and repeat 3.11

3.13. On the SPS Supported Controllers screen, select A11 Radio – Setup and follow the on screen instructions.

3.14. Clear DTC’s

3.15. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

4. If Prepare for Delta Programming/USB File Transfer indicates “Please perform Vehicle Wide Programming”: Return to step 3.1

### XM Activation (If Equipped)

**Important:** On the radio being replaced, record the XM ID from the radio parts label or before removal tune to XM channel 0. This will be used during the call to XM radio to deactivate the receiver that has been removed from the vehicle.

1. Turn the replacement radio ON, tune to the XM channel 0, and record the radio ID. The radio ID will be needed for activation of the receiver.
2. Contact SiriusXM Dealer Support at (800) 852–9696 to activate the new receiver.
3. Park the vehicle outside in an area with an unobstructed view of the southern sky.
4. Leave the vehicle outside with the ignition switch in the ACC position and the radio on for 30 minutes to activate XM service.
5. Once activated, the radio will receive the remaining XM channels.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

**Note:** All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

  8.1. Ignition ON/Vehicle in Service Mode for 1 min.
  8.2. Ignition/Vehicle OFF.
  8.3. Access SPS and follow the on-screen instructions for Replace and Program Control Module above.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

  8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

  8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming, and setup.

### B174W Front View Camera - Windshield: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- Anytime the B174W Frontview Camera - Windshield is removed from its mount, it must follow the Frontview Camera Module Learn procedure.

### Following Replacement of Windshield

The B174W Frontview Camera - Windshield must be calibrated, refer to [Link target (target-id 297673-) not found] .

### Replace and Program Frontview Camera Module or Reprogram Frontview Camera Module (without UGN)

**Note:** Due to continuous improvements, the on screen selections may vary from instructions below.

To program a replacement or an existing B174W Frontview Camera - Windshield , perform the following procedure:

1. Ignition/Vehicle OFF

2. Connect the *EL-52100 MDI 2* Multiple Diagnostic Interface 2 to the computer using a USB cable. Wireless or Bluetooth connections may cause an interruption in the data transfer.
3. Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Programming and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Setup **(if this option is available)** and follow the on-screen instructions.
7. Clear DTCs.
8. Following B174W Frontview Camera - Windshield replacement and reprogramming, the module must be calibrated. Refer to [Link target (target-id 297673-) not found] .

### Replace and Program Frontview Camera Module or Reprogram Frontview Camera Module (with UGN)

To program a replacement or an existing B174W Frontview Camera - Windshield , perform the following procedure:

1. Ignition/Vehicle OFF
2. Connect the *EL-52100 MDI 2* Multiple Diagnostic Interface 2 to the computer using a USB cable. Wireless or Bluetooth connections may cause an interruption in the data transfer.
3. Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Programming and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select B174W Frontview Camera - Windshield – Setup **(if this option is available)** and follow the on-screen instructions.

**Note:** After programming is performed, it is normal to have DTC B101E 4B set until calibration is complete.

If reprogramming an existing module that was previously calibrated, calibration is not required. The module retains its calibration settings during reprogramming. If a new module was programmed the module alignment must be calibrated. Using a scantool, initiate the learn procedure for B174W Frontview Camera - Windshield . The scan tool must remain connected and on the calibration screen during the entire process.

Refer to [Link target (target-id 297673-) not found] .

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Unsuccessful programming attempts may be caused by a weak, slow, or unstable WiFi connection. Connecting computer to facility network via wired connection may resolve module programming issues.

1. DO NOT turn the ignition OFF. Ensure that all B174W Frontview Camera - Windshield , DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the B174W Frontview Camera - Windshield .
3. If the B174W Frontview Camera - Windshield can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the B174W Frontview Camera - Windshield . The B174W Frontview Camera - Windshield should program.
   ⇒ If the B174W Frontview Camera - Windshield still cannot be programmed, replace the B174W Frontview Camera - Windshield .

### B218L Side Obstacle Detection Control Module - Left: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt

programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Reference Information

**Special Tools**

*EL-49642* SPS Programming Support Tool

For equivalent regional tools, refer to *Special Tools 4-68*.

## Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

**Note:**

- Due to continuous improvements, the on screen selections may vary from instructions below.
- Some systems only have one programmable Side Object Sensor Module.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B218 Side Object Sensor Module then select B218R Right Side Object Sensor Module or B218L Left Side Object Detection.
4. On the SPS Select Function / Sequence screen, select Sequential Programming or Programming
5. Clear DTCs.

## Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
   - ⇒ If the ECU still cannot be programmed, replace the ECU.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

## B218R Side Obstacle Detection Control Module - Right: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Reference Information

**Special Tools**
*EL-49642* SPS Programming Support Tool

For equivalent regional tools, refer to *Special Tools 4-68*.

### Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

**Note:**

- Due to continuous improvements, the on screen selections may vary from instructions below.
- Some systems only have one programmable Side Object Sensor Module.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B218 Side Object Sensor Module then select B218R Right Side Object Sensor Module or B218L Left Side Object Detection.
4. On the SPS Select Function / Sequence screen, select Sequential Programming or Programming
5. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
   - ⇒ If the ECU still cannot be programmed, replace the ECU.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### B233B Forward Range Radar Sensor - Long Range: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the Long Range Radar Sensor Module is not properly configured with the correct calibration software, the Long Range Radar Sensor Module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming or programming failure, Long Range Radar Sensor Module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Reprogram Radar Sensor Module - Long Range

To reprogram an existing Long Range Radar Sensor Module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233B Radar Sensor Module - Long Range – Programming and follow the on-screen instructions.
4. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.

### Replace and Program Radar Sensor Module - Long Range

To program a replacement Long Range Radar Sensor Module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233B Radar Sensor Module - Long Range – Programming and follow the on-screen instructions.
4. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.
5. Following programming, the module alignment must be calibrated.

   Refer to [Link target (target-id 283687-) not found] .

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup.

### B233LF Short Range Radar Sensor - Left Front: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

**Note:** This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF
6. Ignition/Vehicle ON
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### B233LR Short Range Radar Sensor - Left Rear: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

**Note:** This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### B233RF Short Range Radar Sensor - Right Front: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.

- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

**Note:** This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF
6. Ignition/Vehicle ON
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### B233RR Short Range Radar Sensor - Right Rear: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

**Note:** This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### B233SL Short Range Radar Rear Side Sensor - Left: Programming and Setup

**Note:**
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

**Note:** This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### B233SR Short Range Radar Rear Side Sensor - Right: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

**Note:** This programming document applies to the B233 Radar Sensor Module – Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Programming and Setup.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select B233 Radar Sensor Module – Short Range - Programming and follow the on-screen instructions.
4. Ignition/vehicle ON. Run Clear Short Range Radar Sensor Vehicle Position located in the scan tool (GDS2) under Configuration/Reset Functions in the B233 Short Range Radar Sensor.
5. Ignition/Vehicle OFF.
6. Ignition/Vehicle ON.
7. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

## K4 Assist Step Control Module: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, , etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Assist Step Learn

If service was performed in which the assist steps were put into the service position, it is necessary to perform the Self Test learn. Refer to: [Link target (target-id 328895-) not found]

### Programming a New Control Module

1. Ignition/Vehicle OFF. Ensure that the key fob is inside the vehicle an not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and / or the setup step will fail or be incomplete.
    - 1.1. Disconnect Wi-Fi dongle from MDI 2. Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer / laptop. Using the EL-49755 (MDI) will result in a programming failure.
    - 1.2. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K4 Assist Step Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow the on-screen instructions.

**Note:** If the Setup step fails and DTC U1962 sets in the K4 Assist Step Control Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 4-53*

5. On the SPS Supported Controllers screen, under Select Function / Sequence, select Setup and follow the on-screen instructions.
6. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

### Programming an Existing Control Module

To program an existing K4 Assist Step Control Module, perform the following procedure.

1. Ignition/Vehicle OFF. Ensure that the key fob is inside the vehicle an not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and / or the setup step will fail or be incomplete.
    - 1.1. Disconnect Wi-Fi dongle from MDI 2. Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer / laptop. Using the EL-49755 (MDI) will result in a programming failure.
    - 1.2. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K4 Assist Step Control Module.

4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow the on-screen instructions.
5. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K4 Assist Step Control Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.
    - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K4 Assist Step Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K4 Assist Step Control Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K4 Assist Step Control Module.
8. Verify the K4 Assist Step Control Module can be programmed.

⇒ **If the control module cannot be reprogrammed**

8.1. Ignition OFF for one minute, ignition ON.

8.2. Ignition ON/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K4 Assist Step Control Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the computer/laptop to a hardwired Ethernet cable, as the large software file size may affect stability.

8.5. Verify the K4 Assist Step Control Module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the K4 Assist Step Control Module.

⇓ If the K4 Assist Step Control Module can be reprogrammed

8.6. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

⇓ **If the control module can be reprogrammed**

9. At the end of programming, choose the “Clear DTCs” function on the SPS screen.

### K5 Automatic Level Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available,

connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K5 Automatic Level Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. With a scan tool, perform the Automatic Level Control Trim Height Learn, if applicable.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

    2.1. Ignition OFF for one minute, ignition ON.

    2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

    2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### K9 Body Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**

- *EL-52545*
  Tire Pressure Monitor Sensor and RF Diagnostic Tool or *EL-50448*
  Tire Pressure Monitor Sensor Activation Tool
- *EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

### Programming a New Control Module

To program a replacement K9 Body Control Module (BCM), perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the control module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.

**Note:** If unable to power mode vehicle for Brake Pedal Position Learn procedure during programming process, the driver door must be opened/closed continuously until the vehicle enters power mode.

5. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
6. Place the keyless entry transmitter in the programming pocket prior to proceeding with the next step. All additional transmitters must be at least 3 m (9.8 ft) away from the vehicle. Refer to the Remote Keyless Entry (RKE) System Operation document in the owner manual for the exact pocket location. This document is located in the Keys, Doors, and Windows > Keys and Locks category.

**Note:**

- To prevent errors or immobilizer learn failure, the vehicle must be in Park (for automatic transmission) or Neutral with park brake applied (for manual transmission).
- If DTC B1987 set immediately after programming a replacement K9 Body Control Module, the Immobilizer Learn procedure was not properly completed. The Immobilizer Learn procedure needs to be performed again.
- The Immobilizer Learn process may take between 10-12 min and progress will appear to have stopped during this process. This is a normal security timer response and a restart should not be performed.

7. On the SPS Supported Controllers screen, select Z1 Immobilizer Learn. On the next screen, select Body Control Module IMMO Learn with Existing Transponder or Remote Key and follow the on-screen instructions. When Immobilizer Learn is complete, press the Unlock button on the keyless entry transmitter to allow the keyless entry transmitter to exit the Immobilizer Learn mode.

**Note:**

- When performing the Tire Pressure Monitor Sensor Learn during K9 Body Control Module setup, the *EL-52545*
  Tire Pressure Monitor Sensor and RF Diagnostic Tool must be used to activate each tire pressure sensor.
- If the Setup step fails and DTC U1962 is set in the K9 Body Control Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 4-53*.

8. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup and follow the on-screen instructions.
9. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
10. Clear DTCs.

### Programming an Existing Control Module

To program an existing K9 Body Control Module, perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the control module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.

3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
6. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
7. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K9 Body Control Module.
   All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K9 Body Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K9 Body Control Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K9 Body Control Module.
8. Verify the K9 Body Control Module can be programmed.

⇒ **If the K9 Body Control Module can not be programmed**

   8.1. Ignition ON/Vehicle in Service Mode for 1 min.

   8.2. Ignition/Vehicle OFF.

   8.3. Access SPS and follow the on-screen instructions for the K9 Body Control Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.
- For optimal consistency during the reprogramming session, we recommend connecting the computer/laptop to a hardwired Ethernet cable, as the large software file size may affect stability.

   8.4. Verify the K9 Body Control Module can be programmed.

⇒ If the K9 Body Control Module can not be programmed, replace the K9 Body Control Module.

⇓ If the K9 Body Control Module can be programmed

   8.5. Clear DTCs.

⇓ **If the K9 Body Control Module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 4-295*.

For control module replacement, programming, and setup, refer to: [Link target (target-id 72864-) not found] .

## K29FV Front Seat Heater Vent Control Module: Programming and Setup

This device does not require programming or setup.

## K29RV Rear Seat Heater Vent Control Module: Programming and Setup

This device does not require programming or setup.

## K36 Restraints Control Module: Programming and Setup

### Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 4-281* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 4-271*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K36 Restraints Control Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.

1. Place the vehicle on level ground (the vehicle must be level or the IMU setup may fail)
2. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
3. Access the Service Programming System (SPS) and follow the on-screen instructions for the K36 Restraints Control Module.
4. Perform the SPS function: **Programming** and follow the on-screen instructions.
5. Perform the SPS function: **Setup** and follow the on-screen instructions.
6. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

**Note:** All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming, and setup.

### K40D Driver Seat Adjuster Memory Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K40D Driver Seat Adjuster Memory Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. Move the seat to a central, middle range position, then perform the memory store operation for memory “1”, “2”, and “Exit” or “3” if equipped. Refer to the Owner Manual for storing memory seat positions.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Disconnect the battery.

   2.2. Wait 1 minute, reconnect the battery.

   2.3. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.4. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### K40P Passenger Seat Adjuster Memory Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K40P Passenger Seat Adjuster Memory Module - Programming and follow the on-screen instructions.
3. Clear DTCs.
4. Move the seat to a central, middle range position, then perform the memory store operation for memory “1”, “2”, and “Exit” or “3” if equipped. Refer to the Owner Manual for storing memory seat positions.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Disconnect the battery.

   2.2. Wait 1 minute, reconnect the battery.

   2.3. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.4. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### K43 Power Steering Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

The Electric Power Steering Control Module is part of the power steering assist motor assembly and is electronically paired with the steering gear's sensors.

### Replace and Program or Reprogramming Control Module

To program a replacement control module, perform the following procedure:

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Setup and follow the on-screen instructions.
5. If the Setup fails, check for DTC U1962. If this DTC is set, perform the Serial Data Authentication Configuration procedure. Then repeat the Setup step.
6. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition/Vehicle ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

2.1. Ignition/Vehicle OFF for one minute, Ignition/Vehicle ON.

2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

### K56 Serial Data Gateway Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**
*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming a New Control Module

To program a replacement K56 Serial Data Gateway Module, perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the K56 Serial Data Gateway Module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.

**Note:** If the Setup step fails and DTC U1962 is set in the K56 Serial Data Gateway Module, perform the Serial Data Authentication Configuration procedure and then repeat the Setup step again. Refer to: *Serial Data Authentication Configuration 4-53*.

6. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Setup and follow the on-screen instructions.

**Note:** If an error message indicates that a module is missing after the Setup procedure is complete, diagnose that module to make sure that it’s connected and communicating and then perform the Programming and Setup procedures again.

7. Clear DTCs.

### Programming an Existing Control Module

To program an existing K56 Serial Data Gateway Module, perform the following procedure:

**Note:**

- Verify all control modules are connected and communicating before attempting to program the K56 Serial Data Gateway Module.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration

of the programming to prevent an inadvertent power mode change during programming.

2. Disconnect Wi-Fi dongle if it is currently connected to *EL-52100* Multiple Diagnostic Interface 2 (MDI 2). Install EL-52100 (MDI 2) using wired USB Connection from MDI 2 to computer and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
3. Install an approved battery maintainer or power supply that provides a steady and stable voltage to support the 12V system during SPS programming events.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.
6. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K56 Serial Data Gateway Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
   - Removing all fuses supplying battery voltage and ignition voltage to the control module.
   - Disconnecting all harness connectors from the control module.
   - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all battery voltage and ignition voltage sources to the K56 Serial Data Gateway Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K56 Serial Data Gateway Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K56 Serial Data Gateway Module.
8. Verify the K56 Serial Data Gateway Module can be programmed.

⇒ **If the K56 Serial Data Gateway Module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K56 Serial Data Gateway Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the K56 Serial Data Gateway Module can be programmed.

⇒ If the K56 Serial Data Gateway Module can not be programmed, replace the K56 Serial Data Gateway Module.

⇓ If the K56 Serial Data Gateway Module can be programmed

8.5. Clear DTCs.

⇓ **If the K56 Serial Data Gateway Module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 4-295*.

For control module replacement, programming, and setup, refer to: [Link target (target-id 72864-) not found] .

## K56U Special Purpose Vehicle Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected form the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, Refer to*https://www.gmupfitter.com/*Then proceed to the following procedures:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K56U Special Vehicle Purpose Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

    2.1. Ignition OFF for one minute, ignition ON.

    2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

    2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup.

## K60 Column Lock Module: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.

- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Column Lock Control Module

To program a replacement column lock control module, perform the following procedure:

**Note:** Before reprogramming, to ensure that the column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors, and wait 5 minutes.

1. Ignition ON.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. If available, on the SPS Supported Controllers screen, select K60 Column Lock Control Module – Prepare Control Module For Removal and follow the on-screen instructions.

**Note:** The Prepare Control Module for Removal function can only be performed when communication with the old control module is still possible

4. Replace the Column Lock Module. Refer to: [Link target (target-id 72864-) not found]
5. Ignition ON for 10 seconds, ignition OFF.
6. Close all doors and wait 5 minutes.
7. Ignition ON.
8. On the SPS Supported Controllers screen, select K60 Column Lock Control Module – Programming and follow the on-screen instructions.
9. Clear DTCs.

### Reprogram Column Lock Control Module

**Note:** Before reprogramming, to ensure that the steering column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors, and wait 5 minutes.

To reprogram an existing column lock control module, perform the following procedure:

1. Ignition ON for 10 seconds, ignition OFF.
2. Close all doors and wait 5 minutes.
3. Ignition ON.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K60 Column Lock Control Module – Programming and follow the on-screen instructions.
6. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

## K61 Sunroof Control Module: Programming and Setup

### Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 4-281* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 4-271*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

## Reference Information

### Special Tools

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

## Programming an Existing or New Control Module

This control module does not require SPS programming or any setup procedures.

Please refer to: [Link target (target-id 130156-) not found] for programming and setup.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming, and setup.

## K67 Trailer Brake Control Module: Programming and Setup

## Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

## K68 Trailer Lighting Control Module: Programming and Setup

The K68 Trailer Lamp Control Module does not require programming, but does require serial data authentication. Refer to: *Serial Data Authentication Configuration 4-53*.

## K71 Transmission Control Module: Programming and Setup (10L80 (MHS, MQC))

## Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: *Diagnostic System Check - Vehicle 4-281*
- Review the description of Strategy Based Diagnosis: *Strategy Based Diagnosis 4-271*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.
- During the programming procedure, follow the Service Programming System (SPS) prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

## Programming an Existing or New Control Module

1. Ignition » On / Vehicle » In Service Mode

**Note:**

- If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.
- If the programming is not successful Refer to: [Link target (target-id 72864-) not found] — K56 Control Module Programing

2. Perform the SPS function:
   - K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.

- K71 Transmission Control Module and follow on-screen instructions.
  - 2.1. Select» Programming
  - 2.2. Select» MCVM Operations— If applicable
  - 2.3. Ignition/Vehicle » Off — For greater than 2 min
  - 2.4. Select» Setup— Follow the on-screen instructions.

3. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
4. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
5. All OK.

## Unsuccessful Programming Recovery

**Note:**

- If programming is still not successful after the second programming attempt, check the following:
- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition » On / Vehicle » In Service Mode
3. Perform one of the following SPS Programming functions:

**Note:** If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
- K71 Transmission Control Module and follow on-screen instructions.

4. Verify the control module programming is successful.

⇒ If the programming is not successful » Replace the component: K71 Transmission Control Module

⇓ If the programming is successful

- 4.1. Select» MCVM Operations— If applicable
- 4.2. Ignition/Vehicle » Off — For greater than 2 min
- 4.3. Select» Setup— Follow the on-screen instructions.

  If setup is not an available option — Perform the appropriate learn/reset procedure with the scan tool

⇓ **If the programming is successful**

5. Select» MCVM Operations— If applicable
6. Ignition/Vehicle » Off — For greater than 2 min
7. Select» Setup— Follow the on-screen instructions.

   If setup is not an available option — Perform the appropriate learn/reset procedure with the scan tool
8. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.
9. Perform the scan tool configuration/reset function: Transmission Service Fast Learn— If available
10. All OK.

## Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 4-295*

For control module replacement, programming, and setup refer to: [Link target (target-id 72864-) not found]

## K73 Telematic Control Module: Programming and Setup (UE1/UER w/o CZ2/MAQ)

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as

needed during the procedure, independent of the vehicle’s power mode.

- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Diagnostic Aids

**Note:** Check for Preliminary Information or Technical Service Bulletins before programming.

- It is critical to use the service replacement K73 Telematic Control Module only in the vehicle for which it was ordered.
- Failure to perform the following procedures will result in a red LED, DTC(s) being set, and limited or incomplete OnStar® services.
- An OnStar® button press to the OnStar® call center is required to complete the module replacement procedure.
- To fully activate an OnStar® module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar® subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar® with the correct unit information.
- To initialize the Turn-by-Turn feature (if equipped), the vehicle must first be driven In open sky condition at speeds greater than 10 mph (16 kph) or more for a minimum of 5 miles (8 km) , and perform at least 2 left and 2 right 90 degree turns coming to complete stops prior to each turn.
- On vehicles up fitted with TTY capabilities, it is necessary to perform a power cycle of the OnStar® Interface Module (OTIM), and toggle the TTY mode after completing the Communication Interface Module installation and setup procedures.

## Reference Information

### Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

## Replace and Program Control Module

To program a replacement control module, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

**Note:** When the control module is replaced the correct order MUST be followed: Software Update then Programming and Service Activation.

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Check and follow Preliminary Information or Technical Service Bulletins before programming. If control module software updates are available, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Software Update or Delta Programming and follow the on-screen instructions.

**Note:** Refer to and follow the Preliminary Information or Service Bulletin to successfully program this control module.

4. To properly calibrate, activate and configure the control module, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Programming and Service Activation and follow the on-screen instructions.
5. Clear DTCs.
6. Ignition/Vehicle ON.
7. Press the OnStar® Blue Button to call OnStar®, inform the advisor a new module has been installed and to verify the module is fully configured, registered, and activated.

**Note:** An OnStar® button press to the OnStar® call center is required to complete the module replacement procedure.

## Programming Control Module for an Update

To program an existing control module for an update, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Check and follow Preliminary Information or Technical Service Bulletins before programming. If control module software updates are available, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Software Update or Delta Programming and follow the on-screen instructions.

**Note:** For programming an existing module, you only need to perform “Software Update or Delta Programming”.

4. Clear DTCs.

## Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

4. Ignition OFF for one minute.
   - 4.1. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

⇒ Replace the control module.

⇓ **If the control module can be reprogrammed**

- 4.2. Clear DTCs.
- 4.3. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair procedure.

Refer to [Link target (target-id 72864-) not found] for control module replacement, programming and setup.

## K73 Telematic Control Module: Programming and Setup (UE1/UER with CZ2/MAQ)

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

## Diagnostic Aids

**Note:** Check for Preliminary Information or Technical Service Bulletins before programming.

- It is critical to use the service replacement K73 Telematic Control Module only in the vehicle for which it was ordered.
- Failure to perform the following procedures will result in a red LED, DTC(s) being set, and limited or incomplete OnStar® services.
- An OnStar® button press to the OnStar® call center is required to complete the module replacement procedure.
- To fully activate an OnStar® module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar® subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar® with the correct unit information.
- To initialize the Turn-by-Turn feature (if equipped), the vehicle must first be driven In open sky condition at speeds greater than 10 mph (16 kph) or more for a minimum of 5 miles (8 km) , and perform at least 2 left and 2 right 90 degree turns coming to complete stops prior to each turn.
- On vehicles up fitted with TTY capabilities, it is necessary to perform a power cycle of the OnStar® Interface Module (OTIM), and toggle the TTY mode after completing the Communication Interface Module installation and setup procedures.

## Reference Information

### Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

**Note:** For successful programming the correct order MUST be followed: Prepare for Software Update ,Software Update then Programming and Service Activation.

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K73 Telematic Control Module – Prepare for Software Update
4. Check and follow Preliminary Information or Technical Service Bulletins before programming. If control module software updates are available, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Software Update and follow the on-screen instructions.

**Note:** Refer to and follow the Preliminary Information or Service Bulletin to successfully program this control module.

5. To properly calibrate, activate and configure the control module, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Programming and Service Activation and follow the on-screen instructions.
6. Clear DTCs.
7. Ignition/Vehicle ON.
8. Press the OnStar® Blue Button to call OnStar®, inform the advisor a new module has been installed and to verify the module is fully configured, registered, and activated.

**Note:** An OnStar® button press to the OnStar® call center is required to complete the module replacement procedure.

### Programming Control Module for an Update

To program an existing control module for an update, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

**Note:** For successful programming the correct order MUST be followed: Prepare for Software Update then Software Update.

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K73 Telematic Control Module – Prepare for Software Update
4. Check and follow Preliminary Information or Technical Service Bulletins before programming. If control module software updates are available, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Software Update and follow the on-screen instructions.

**Note:** Refer to and follow the Preliminary Information or Service Bulletin to successfully program this control module.

5. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

4. Ignition OFF for one minute.
   - 4.1. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

⇒ Replace the control module.

⇓ **If the control module can be reprogrammed**

   - 4.2. Clear DTCs.
   - 4.3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair procedure.

Refer to [Link target (target-id 72864-) not found] for control module replacement, programming and setup.

### K73 Telematic Control Module: Programming and Setup (UES)

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the

data link connector. If there is an interruption during programming, programming failure or control module damage may occur.

- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Diagnostic Aids

**Note:** Check for Preliminary Information or Technical Service Bulletins before programming.

- It is critical to use the service replacement K73 Telematic Control Module only in the vehicle for which it was ordered.
- To fully activate an OnStar® module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar® subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar® with the correct unit information.
- To initialize the Turn-by-Turn feature (if equipped), the vehicle must first be driven In open sky condition at speeds greater than 10 mph (16 kph) or more for a minimum of 5 miles (8 km) , and perform at least 2 left and 2 right 90 degree turns coming to complete stops prior to each turn.
- On vehicles up fitted with TTY capabilities, it is necessary to perform a power cycle of the OnStar® Interface Module (OTIM), and toggle the TTY mode after completing the Communication Interface Module installation and setup procedures.

## Reference Information

### Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

## Replace and Program Control Module

To program a replacement control module, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

**Note:** When the control module is replaced the correct order MUST be followed: Software Update then Programming and Service Activation.

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Check and follow Preliminary Information or Technical Service Bulletins before programming. If control module software updates are available, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Software Update or Delta Programming and follow the on-screen instructions.

**Note:** Refer to and follow the Preliminary Information or Service Bulletin to successfully program this control module.

4. To properly calibrate, activate and configure the control module, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Programming and Service Activation and follow the on-screen instructions.
5. Clear DTCs.

## Programming Control Module for an Update

To program an existing control module for an update, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Check and follow Preliminary Information or Technical Service Bulletins before programming. If control module software updates are available, in the SPS Supported Controllers screen, select K73 Telematic Control Module – Software Update or Delta Programming and follow the on-screen instructions.

**Note:** For programming an existing module, you only need to perform “Software Update or Delta Programming”.

4. Clear DTCs.

## Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

4. Ignition OFF for one minute.
   4.1. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

⇒ Replace the control module.

⇓ **If the control module can be reprogrammed**

   4.2. Clear DTCs.
   4.3. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair procedure.

Refer to [Link target (target-id 72864-) not found] for control module replacement, programming and setup.

## K73 Telematic Control Module: Programming and Setup (UDA)

**Note:**
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Reference Information

### Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. In the SPS Supported Controllers screen, select K73 Telematic Control Module and Service Activation and follow the on-screen instructions.
4. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Begin with the vehicle in the vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  3.1. Ignition OFF for one minute.

  3.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  3.3. All OK.

⇓ **If the control module can be reprogrammed**

4. All OK.

## K85P Restraints Occupant Classification System Module - Passenger: Programming and Setup

### Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle 4-281* prior to using this diagnostic procedure.
- Review the description of *Strategy Based Diagnosis 4-271*

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

### Reference Information

**Special Tools**

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Programming an Existing or New Control Module

To program an existing or new control module, perform the following procedure:

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the K85P Restraints Occupant Classification System Module.

- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Before ROCSM Programing and Setup can be conducted, the front passenger seat must be completely empty of all items. The presence of any liquid or items on the front passenger seat will affect the calibration and operation of the ROCSM.
- DTC U3000.99 will set if the re-zero system test is performed with:
  - An aftermarket seat heater located too close to the sensor mat
  - A scan tool, laptop or other electronic device is in the seat.
  - The seat is damp or wet
  - An object or person is in the seat

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Verify that the temperature is between 32°F (0°C) to 100°F (38 °C).
3. Verify the seat is completely dry.
4. Empty the front outboard passenger seat.
5. Verify that all SIR and ROCSM components, connectors, and connector position assurances are properly connected and mounted.
6. Access the Service Programming System (SPS) and follow the on-screen instructions for the K85P Restraints Occupant Classification System Module.
7. Perform the SPS function: **Programming** and follow the on-screen instructions.
8. Perform the SPS function: **Setup** and follow the on-screen instructions.
9. Clear DTCs.

## Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module.

**Note:** All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:

- Removing all fuses supplying battery voltage and ignition voltage to the control module.
- Disconnecting all harness connectors from the control module.
- Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

  8.1. Ignition ON/Vehicle in Service Mode for 1 min.

  8.2. Ignition/Vehicle OFF.

  8.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.

- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

### Repair Instructions

For module replacement, refer to: [Link target (target-id 188211-) not found]

### K99 Steering Column Control Module: Programming and Setup

When replacing the K99 Steering Column Control Module, steering column tilt motor, or steering column telescope motor, the steering column tilt wheel and telescope control module learn procedure must be followed. Refer to [Link target (target-id 225575-) not found] steering column tilt wheel and telescope control module learn procedure.

### K111 Fuel Pump Driver Control Module: Programming and Setup

This control module does not require SPS programming but does require the following setup procedures after a new control module is installed:

### Setup for Component Replacement — Fuel Pump Driver Control Module Configuration/ Fuel Pump Power Control Module Configuration

1. Ignition » On / Vehicle » In Service Mode — For 2 min
2. Ignition/Vehicle » Off — For 2 min
3. Ignition » On / Vehicle » In Service Mode
4. Perform the following action: Clear the DTCs.
5. Start Engine
6. Verify DTC P1005 is not set

⇒ **If the DTC sets**

6.1. Perform the following action: Clear the DTCs.

6.2. Ignition/Vehicle » Off — For 2 min

6.3. Start Engine

6.4. Verify the DTC does not set.

⇒ If the DTC sets» Repeat the procedure starting at step 1

⇒ If the DTC is not set » Configuration— Complete

⇓ **If the DTC is not set**

7. Configuration— Complete

### K124 Image Processing Module: Programming and Setup (without UKL)

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the image processing module is not properly configured with the correct calibration software, the image processing module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming or programming failure, image processing module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program K124 Image Processing Module or Reprogram K124 Image Processing Module

**Note:** Due to continuous improvements, the on screen selections may vary from instructions below.

To program a replacement or an existing K124 Image Processing Module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Connect the *EL-52100 MDI 2* Multiple Diagnostic Interface 2 to the computer using a USB cable. Wireless or Bluetooth connections may cause an interruption in the data transfer.

3. Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K124 Image Processing Module – Programming and follow the on-screen instructions.
6. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

**Note:** Unsuccessful programming attempts may be caused by a weak, slow, or unstable WiFi connection. Connecting computer to facility network via wired connection may resolve module programming issues.

1. Ignition ON. Ensure the image processing module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K124 Image Processing Module can be reprogrammed.

⇒ **If the K124 Image Processing Module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the K124 Image Processing Module can be reprogrammed.

⇒ If the image processing module cannot be reprogrammed, replace the K124 Image Processing Module.

⇓ If the K124 Image Processing Module can be reprogrammed.

   2.3. All OK.

⇓ **If the K124 Image Processing Module can be reprogrammed**

3. All OK.

### K124 Image Processing Module: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the image processing module is not properly configured with the correct calibration software, the image processing module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming or programming failure, image processing module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

There one K124 Image Processing Module with two internal processors with UKL. Both processors must be at the same level of software. To ensure this, programming processors individually is prohibited. For more information refer to: *Super Cruise Description and Operation 11-35*

### Reprogram Image Processing Module

**Note:** Due to continuous improvements, the on screen selections may vary from instructions below.

To reprogram an existing K124 Image Processing Module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K124 Image Processing Module – Programming and follow the on-screen instructions.
4. Clear DTCs.

### Replace and Program Image Processing Module

**Note:** Due to continuous improvements, the on screen selections may vary from instructions below.

To program a replacement K12 Image Processing Module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K124 Image Processing Module – Programming and follow the on-screen instructions.
4. Perform the Vehicle Dynamic Sensor Offset Calibration. Refer to: [Link target (target-id 330157-) not found]
5. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the Image Processing Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K124 Image Processing Module can be reprogrammed.

⇒ **If the K124 Image Processing Module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the appropriate K124 Image Processing Module can be reprogrammed.

⇒ If the image processing module cannot be reprogrammed, replace the appropriate K124 Image Processing Module.

⇓ If the K124 Image Processing Module can be reprogrammed.

   2.3. All OK.

⇓ **If the K124 Image Processing Module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

### K160 Brake System Control Module: Programming and Setup

**Note:**
- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module (K160 Brake System Control Module with or without A104 Brake Master Cylinder)

To program a replacement control module with or without brake master cylinder, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. If equipped with Brake Pad Life Monitor (JBP), on the SPS Supported Controllers screen, select K160 Brake System Control Module - Prepare Module for Removal and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K160 Brake System Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K160 Brake System Control Module - Setup and follow the on-screen instructions.
5. If setup is successful, clear DTCs and go to step 8

**Note:** Do not perform the Brake System Plunger Pressure Rise Starting Point learn procedure at this time.

6. If any of the Configuration/Reset procedures are unsuccessful, perform the appropriate GDS2 Configuration/Reset procedure:
   - Brake Pressure Sensor Calibration

  - Brake Pedal Travel Sensor Learn
  - Brake System Plunger Motor Position Sensor Learn
  - Park Brake Calibration Command

7. If the Setup Procedures did not complete and a Device Control Limits Exceeded message is displayed refer to [Link target (target-id 316903-) not found]
8. Perform the Hydraulic Brake System Bleeding procedure refer to [Link target (target-id 50160-) not found]
9. Clear DTCs.
10. If ABS, Traction Control and/or Stabilitrak indicators or Brake Related Messages are ON after performing programming and setup, do the following:
    - 10.1. Disconnect the scan tool from the X84 Data Link Connector.
    - 10.2. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 10 min to power down.
    - 10.3. Ignition ON/Vehicle In Service Mode, verify ABS, Traction Control and/or Stabilitrak indicators or Brake Messsages are Off. If not, repeat the above step to make sure the vehicle is in sleep mode.
    - 10.4. Clear DTCs.

### Reprogram Control Module (K160 Brake System Control Module)

To reprogram an existing control module, perform the following procedure:

1. Ignition/Vehicle OFF.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K160 Brake System Control Module - Programming and follow the on-screen instructions.
4. If the programming procedure did not complete and a Device Control Limits Exceeded message is displayed refer to [Link target (target-id 316903-) not found]
5. Clear DTCs.
6. If ABS, Traction Control and/or Stabilitrak indicators or Brake Related Messages are ON after performing programming, do the following:
    - 6.1. Disconnect the scan tool from the X84 Data Link Connector.
    - 6.2. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 10 min to power down.
    - 6.3. Ignition ON/Vehicle In Service Mode, verify ABS, Traction Control and/or Stabilitrak indicators or Brake Messsages are Off. If not, repeat the above step to make sure the vehicle is in sleep mode.
    - 6.4. Clear DTCs.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.

***Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.***

- Check the 12 volt battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 battery charger to deactivate before disconnecting the battery negative cable. For more information refer to *Charging System Description and Operation 7-96* . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the control module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Access the Service Programming System (SPS) and follow the on-screen instructions for the control module.
7. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

7.1. Ignition ON/Vehicle in Service Mode for 1 min.

7.2. Ignition/Vehicle OFF.

7.3. Access SPS and follow the on-screen instructions for the control module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

7.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the control module.

⇓ If the control module can be programmed

7.5. Clear DTCs.

⇓ **If the control module can be programmed**

8. Clear DTCs.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

## K164 Differential Control Module: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Diagnostic Aids

- If replacing only the Differential Control Module, run Prepare the Control Module for Removal.
- If original Differential Control Module is not communicating, skip the Prepare the Control Module for Removal step.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Install the new rear differential assembly with new K164 Differential Control Module.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Replace the new K164 Rear Differential Clutch Control Module with the original K164 Differential Control Module.
4. On the SPS Supported Controllers screen, select K164 Differential Control Module - Programming and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K164 Differential Control Module - Setup and follow the on-screen instructions.
6. Clear DTCs.

### Reprogram Control Module

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K164 Differential Control Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K164 Differential Control Module - Setup and follow the on-screen instructions.
4. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K164 Rear Differential Clutch Control Module can be reprogrammed.

⇒ **If the K164 Differential Control Module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the K164 Differential Control Module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the K164 Differential Control Module.

⇓ If the control module can be reprogrammed.

   2.3. All OK.

⇓ **If the K164 Differential Control Module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

### K175 Center Console Compartment Cooler Control Module: Programming and Setup

There is no setup procedure that needs to be performed for the center console compartment cooler control module on this vehicle.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for the center console compartment cooler control module replacement, programming and setup

### K182 Parking Assist Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, under Select Controller, select K182 Parking Assist Control Module.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
5. Clear DTCs.

### Reprogram Control Module

Do not reprogram the parking assist control module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K182 Parking Assist Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the K182 Parking Assist Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the parking assist control module can be reprogrammed.

⇒ **If the K182 Parking Assist Control Module cannot be reprogrammed**

   2.1. Ignition OFF for one minute, ignition ON.

   2.2. Verify the parking assist control module can be reprogrammed.

⇒ If the K182 Parking Assist Control Module cannot be reprogrammed, replace the parking assist control module.

⇓ If the K182 Parking Assist Control Module can be reprogrammed.

   2.3. All OK.

⇓ **If the K182 Parking Assist Control Module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

### K183 UHF Short Range Low Energy Remote Control Access Transceiver: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

## Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K183 UHF Short Range Low Energy Remote Control Access Transceiver.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Configuration and follow the on-screen instructions.
5. Clear DTCs.

## Reprogram Control Module

Do not reprogram the module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K183 UHF Short Range Low Energy Remote Control Access Transceiver.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. Clear DTCs.

## Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Vehicle in SERVICE MODE. Ensure the K183 UHF Short Range Low Energy Remote Control Access Transceiver, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the module can be reprogrammed.

⇒ **If the K183 UHF Short Range Low Energy Remote Control Access Transceiver cannot be reprogrammed**

   2.1. Vehicle OFF for one minute, Vehicle in SERVICE MODE.

   2.2. Verify the K183 UHF Short Range Low Energy Remote Control Access Transceiver can be reprogrammed.

⇒ If the K183 UHF Short Range Low Energy Remote Control Access Transceiver cannot be reprogrammed, replace the module.

⇓ If the K183 UHF Short Range Low Energy Remote Control Access Transceiver can be reprogrammed.

   2.3. All OK.

⇓ **If the K183 UHF Short Range Low Energy Remote Control Access Transceiver can be reprogrammed**

3. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

## K194 Rear Gate Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. DO NOT use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI connection be used when programming the control module.

## Replace and Program Control Module

**Note:**

- Some vehicles may be equipped with the handsfree liftgate control option (TC2), or handsfree liftgate control option (TCP) it is important to select the correct calibration software for vehicles with or without this option as programming the liftgate with the incorrect software will cause the power liftgate system to become inoperative without any DTCs indicated
- The liftgate must be completely closed and latched, if the liftgate is open or ajar during programming, the power liftgate system may become inoperative without any DTCs indicated
- Verify all modules are connected and communicating before attempting to program the K194 Rear Gate Module.

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Setup and follow the on-screen instructions.
4. Clear DTCs

## Reprogram Control Module

**Note:**

- Some vehicles may be equipped with the handsfree liftgate control option (TC2), or handsfree liftgate control option (TCP) it is important to select the correct calibration software for vehicles with or without this option as programming the liftgate with the incorrect software will cause the power liftgate system to become inoperative without any DTCs indicated
- The liftgate must be completely closed and latched, if the liftgate is open or ajar during programming, the power liftgate system may become inoperative without any DTCs indicated
- Verify all modules are connected and communicating before attempting to program the K194 Rear Gate Module.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K194 Rear Gate Module - Setup and follow the on-screen instructions.
4. Clear DTCs

## Unsuccessful Programming Recovery

In the event of an interrupted of unsuccessful programming event, perform the following steps:

1. Vehicle Power Mode » Run/Service Mode.
2. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
3. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

    3.1. Vehicle Power Mode » OFF for one minute, Vehicle Power Mode » Run/Service Mode.

    3.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

    3.3. All OK.

⇓ **If the control module can be reprogrammed**

4. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for rear gate module replacement, programming and setup

## K212 Gear Shift Control Module: Programming and Setup

This device does not require programming or setup.

## K219 Lighting Control Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the *EL-49642* SPS Programming Support Tool to maintain system voltage. If not available, connect a fully

charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

To program a replacement control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K219 Lighting Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. On the SPS Supported Controllers screen, under Select Function / Sequence, select Setup and follow the on-screen instructions.
5. Clear All DTCs.

### Reprogram Control Module

Do not reprogram the lighting control module, unless directed by a service procedure, or a service bulletin.

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, under Select Controller, select K219 Lighting Control Module.
3. On the SPS Supported Controllers screen, under Select Function / Sequence, select Programming and follow on screen instructions.
4. Clear All DTCs.

### Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming Systems and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the control module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.

    ***Warning: Always ensure the Battery Maintenance Mode is inactive before disconnecting the low voltage 12 volt battery (or batteries). This mode can be active with the ignition off, regardless of whether the vehicle charging cord is plugged in or not. When this mode is active, the on-board high voltage battery charger(s) will energize the 12 volt battery cables and charge the 12 volt battery (or batteries). Disconnecting any battery cables while this mode is active may result in an electrical shock or a burn from hot battery cable leads.***

    - Check the 12 V battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 Battery Charger to deactivate before disconnecting the battery negative cable. For more information, refer to *Charging System Description and Operation 7-96* . With Battery Maintenance Mode inactive, perform a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .
3. Reconnect all Battery voltage and Ignition voltage sources to the Control Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the control module, data link connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration

of the programming to prevent an inadvertent power mode change during programming.

7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K219 Lighting Control Module.
8. Verify the control module can be programmed.

⇒ **If the control module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K219 Lighting Control Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the control module can be programmed.

⇒ If the control module can not be programmed, replace the K219 Lighting Control Module.

⇓ If the control module can be programmed

8.5. Clear DTCs.

⇓ **If the control module can be programmed**

9. Clear DTCs.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

## K299R Audio/Video Interface Rear Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle's power mode.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

## Reference Information

### Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

## Replace and Program or Reprogram Control Module

The replacement control module is fully programmed by the supplier and does not require SPS programming or any setup procedures.

## Reprogram Control Module

To program an existing control module, perform the following procedure:

**Note:** In SPS when selecting K299 – Audio/Video Interface Module, the system will automatically program both the K299 – Audio/Video Interface Module and the K299R – Audio/Video Interface Rear Module sequentially if both module’s need updating. If one module’s calibrations are current and one modules calibrations needs an update, it will only program the one that needs updating. If both module’s calibrations are current neither will be programmed.

1. Ignition/Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

**Note:** Delta programming for the K299R Audio/Video Interface Rear Module is only used during Vehicle Wide Programming.

3. On the SPS Supported Controllers screen, select K299 – Audio/Video Interface Module Programming and follow the on-screen instructions.
4. At the end of programming, clear DTCs

## Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

**Note:** If Ethernet programming fails, ensure the module is communicating over ethernet properly. Refer to [Link target (target-id 300812-) not found]

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

## Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for control module replacement, programming and setup

## K313 Interior Object Detection Module: Programming and Setup

**Note:**
- Always verify the module has the newest software available before replacing the module.
- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- Programming must begin with the Ignition/Vehicle OFF. Programming will direct the appropriate control module(s) to change power mode as needed during the procedure, independent of the vehicle’s power mode.
- To prevent programming failure due to unintended wireless drops, it is recommended that a wired MDI 2 connection be used when programming the control module.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to No.

## Reference Information

### Special Tools

*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

For equivalent regional tools, refer to *Special Tools 4-68*.

## Programming a New Control Module

To program a replacement K313 Interior Object Detection Module, perform the following procedure:

**Note:**
- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working

properly. Using the EL-47955 (MDI) will result in a programming failure.

- Verify all control modules are connected and communicating before attempting to program the control module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K313 Interior Object Detection Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K313 Interior Object Detection Module - Setup and follow the on-screen instructions.
5. Clear DTCs.

## Programming an Existing Control Module

To program an existing K313 Interior Object Detection Module, perform the following procedure:

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle and verify it is working properly. Using the EL-47955 (MDI) will result in a programming failure.
- Verify all control modules are connected and communicating before attempting to program the control module.
- Verify the key fob is inside the vehicle. If the key fob is not inside the vehicle, the serial data authentication configuration procedure which runs automatically at the end of the programming step will fail even though the programming appears to run successfully. If the serial data authentication configuration procedure fails, DTC U1962 will set and/or the setup step will fail or be incomplete.
- Begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.

1. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K313 Interior Object Detection Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K313 Interior Object Detection Module - Setup and follow the on-screen instructions.
5. Clear DTCs.

## Unsuccessful Programming Recovery

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Exit Service Programming System (SPS) and disconnect all programming equipment from the vehicle.
2. Disconnect all battery voltage or ignition voltage sources from the K313 Interior Object Detection Module. All voltage sources must be removed for a minimum of 10 min. This can be done several ways and should be completed by using the least intrusive way. This can vary depending on vehicle and control module location and can be done by one of the options listed below:
    - Removing all fuses supplying battery voltage and ignition voltage to the control module.
    - Disconnecting all harness connectors from the control module.
    - Performing a 12 V battery disconnect by disconnecting the battery negative cable. Refer to [Link target (target-id 37733-) not found] .

3. Reconnect all battery voltage and ignition voltage sources to the K313 Interior Object Detection Module.
4. Close down the current session of Techline Connect and reopen a new session.
5. Verify the K313 Interior Object Detection Module, X84 Data Link Connector, and programming tool connections are secure and the tool software is up to date.
6. Ignition/Vehicle OFF, ensure that the key fob is inside the vehicle and not moved for the duration of the programming to prevent an inadvertent power mode change during programming.
7. Access the Service Programming System (SPS) and follow the on-screen instructions for the K313 Interior Object Detection Module.
8. Verify the K313 Interior Object Detection Module can be programmed.

⇒ **If the K313 Interior Object Detection Module can not be programmed**

8.1. Ignition ON/Vehicle in Service Mode for 1 min.

8.2. Ignition/Vehicle OFF.

8.3. Access SPS and follow the on-screen instructions for the K313 Interior Object Detection Module.

**Note:** If programming is still not successful after the second programming attempt, check the following:

- For facilities using an internet firewall, ensure firewall settings are not blocking file downloads and/or require elevated rights.
- For United States and Canada GM dealers, the appropriate firewall settings can be found in the GM DEALER INFRASTRUCTURE & SECURITY GUIDELINES (DISG) section 2.d.vii.

8.4. Verify the K313 Interior Object Detection Module can be programmed.

⇒ If the K313 Interior Object Detection Module can not be programmed, replace the K313 Interior Object Detection Module.

⇓ If the K313 Interior Object Detection Module can be programmed

8.5. Clear DTCs.

⇓ **If the K313 Interior Object Detection Module can be programmed**

9. Clear DTCs.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 4-295*.

For control module replacement, programming, and setup, refer to: [Link target (target-id 72864-) not found] .

## T1 Accessory AC and DC Power Control Module: Programming and Setup

This device does not require programming or setup.

## T3 Audio Amplifier: Programming and Setup

**Note:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, , etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Diagnostic Aids

During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

### Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Ignition OFF, Vehicle OFF
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select T3 Audio Amplifier – Programming and follow the on-screen instructions.
4. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### T22 Wireless Accessory Charging Module: Programming and Setup

**Note:**

- Always verify the module has the newest software available before replacing the module.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select T22 Wireless Accessory Charging Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

### Reprogram Control Module

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select T22 Wireless Accessory Charging Module - Programming and follow the on-screen instructions.
3. Clear DTCs.

### Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.

⇒ **If the control module cannot be reprogrammed**

  2.1. Ignition OFF for one minute, ignition ON.

  2.2. Verify the control module can be reprogrammed.

⇒ If the control module cannot be reprogrammed, replace the control module.

⇓ If the control module can be reprogrammed.

  2.3. All OK.

⇓ **If the control module can be reprogrammed**

3. All OK.

### Repair Instructions

Perform the *Diagnostic Repair Verification 4-295* after completing the repair.

[Link target (target-id 72864-) not found] for Control Module replacement, programming and setup

## Serial Data Authentication Configuration

### General Information

Serial Data Authentication Configuration ensures secure communication between control modules over different channels by encrypting sensitive data. Secret keys are written to the control modules, allowing messages on the bus to be encrypted.

- During the process, control module data is retrieved from the vehicle to generate unique cryptographic keys.
- These keys are then written to each control module, allowing secure communication between control modules.
- In the case of control module replacement, re-running the configuration is required to introduce the new control module to the network; otherwise, communication will fail due to unrecognized messages.

### Reference Information

**Special Tools**
*EL-52100* Multiple Diagnostic Interface 2 (MDI 2)

### Serial Data Authentication Configuration

**Note:** Before attempting to perform the Serial Data Authentication Configuration procedure,

- Make sure all CAN control modules are connected and communicating.
- Diagnose the following communication DTCs first: DTC U0073-U007E, U0100-U02FF, U1100-U12FF, U1600-U17FF, U1977, U1978, U2200-U23FF, and U2400-U25FF.
- Diagnose the following programming DTCs: U3000 51, U3000 52, U3000 53, U3000 56, and U3000 57.
- If DTC U1962 is stored only as a history DTC and not retrieved as a current DTC, do not perform the Serial Data Authentication Configuration procedure.
- DO NOT perform the Serial Data Authentication Configuration procedure unless directed to by a service procedure or a service bulletin.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Check the 12 V battery with a digital multimeter and ensure the voltage is above 12.5 V. When required, install a battery maintainer or power supply that provides a steady and stable voltage. DO NOT use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.

1. Ignition/Vehicle OFF, keep the key inside the vehicle.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

**Note:** The Serial Data Authentication Configuration button is located in the lower right corner of the SPS Supported Controllers screen in the Techline Connect system.

3. On the SPS Supported Controllers screen, select Serial Data Authentication Configuration button and follow the on-screen instructions.
4. Ignition/Vehicle OFF, disconnect the scan tool from the vehicle, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from vehicle. Allow the vehicle to go into sleep mode.
5. Ignition ON/Vehicle In Service Mode.
6. Using a scan tool, clear DTCs.

### Troubleshooting

Serial Data Authentication Configuration can fail for several reasons. After confirming all control modules are fully programmed and that no underlying issues exist, follow these steps to attempt a successful configuration:

1. Verify X84 Data Link Connector (DLC) Connection: Ensure the X84 Data Link Connector is securely attached to the vehicle.
2. Use a Direct MDI 2 Connection: Connect the scan tool directly to the computer via a wired connection instead of using wireless connection (Techline Connect may need to be reset to change the connection type).
3. Disconnect the 12 V Battery: Reset the vehicle systems by disconnecting the 12 V battery negative cable for 1 min. For electric vehicles, check the 12 V battery voltage with a digital multimeter before disconnecting any battery cables leads. If the voltage is 13.5 V or above, the Battery Maintenance Mode is active. The technician must wait for the T18 Battery Charger to deactivate before disconnecting the battery negative cable. Follow the appropriate steps in the Battery Negative Cable Disconnection and Connection procedure located under the Starting, Charging, and Low Voltage Energy Storage category.

4. Perform the Serial Data Authentication Configuration procedure. If the procedure still fails, inspect the X84 Data Link Connector for contamination, corrosion, and terminal tension and inspect the wiring between the X84 Data Link Connector and K56 Serial Data Gateway Module for any faults.

In the case of a Serial Data Authentication Configuration failure, the SPS error window should point to which control module is failing:

- Function: “Key Provisioning” refers to Serial Data Authentication Configuration.
- Sub Function: refers to which step in the process failed.
- ECU: refers to the failing control module if that is the case.

If the Sub Function column in SPS error window points to a “Configure Link” error, run through the trouble shooting steps 1-4 above.

If no SPS error window is displayed, but the SPS screen indicates that Serial Data Authentication Configuration has Failed, run through the trouble shooting steps 1-4 above.

### Service Programming System (SPS)

For step-by-step control module programming instructions, please refer to the techline information system (TIS) terminal.

Review the information below to ensure proper programming protocol.

**Note:**

- DO NOT program a control module unless you are directed by a service procedure or you are directed by a General Motors service bulletin. Programming a control module at any other time will not permanently correct a customers concern.
- It is essential that the TIS terminal, MDI/MDI2, and/or Scan Tool, is equipped with the latest software before performing service programming.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programing. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Some modules will require additional programming/setup events to be performed before or after programming.
- Some vehicles may require the use of a CANDi or MDI/MDI2 module for programming.
- Review the appropriate service information for these procedures.
- DTCs may set during programming. Clear DTCs after programming is complete.
- Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Ensure the following conditions are met before programming a control module:

1. Vehicle system voltage:
   - There is not a charging system concern. All charging system concerns must be repaired before programming a control module.
   - Battery voltage is greater than 12 volts but less than 16 volts. The battery must be fully charged before programming the control module.
   - Turn OFF or disable any system that may put a load on the vehicles battery, such as the following components:
     - Interior lights
     - Exterior lights including daytime running lights (DRL)—Applying the parking brake, on most vehicles, disables the DRL system
     - Heating, ventilation, and air conditioning (HVAC) systems
     - Engine cooling fans
     - Radio, etc.
2. The ignition switch must be in the proper position. SPS prompts you to turn ON the ignition, with the engine OFF. DO NOT change the position of the ignition switch during the programming procedure, unless instructed to do so.
3. Make certain all tool connections are secure, including the following components and circuits:
   - Scan Tool
     - The RS-232 communication cable port
     - The connection at the data link connector (DLC)
     - The voltage supply circuits
   - MDI/MDI2
     - The USB, Ethernet or Wireless communication port
     - The connection at the data link connector (DLC)
4. DO NOT disturb the tool harnesses while programming. If an interruption occurs during the programming procedure, programming failure or control module damage may occur.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all control module and DLC connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the control module.
3. If the control module can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the control module. The control module should program.
   - ⇒ If the control module still cannot be programmed, replace the control module.

After successfully programming the control module, ensure that all post programming procedures are performed; refer to [Link target (target-id 72864-) not found] for the appropriate control module Programming and Setup document for any required procedures.

## Q77 Transmission Control Solenoid Valve Characterization Programming

The solenoids in this transmission require unique performance characteristic data in order to function at maximum efficiency. This data is programmed and stored in the vehicle's transmission control module (TCM). When a transmission assembly, TCM, or solenoids are replaced during service, the performance characteristic data for the solenoids must be retrieved from a web server "cloud" repository and reprogrammed into the TCM.

Reprogramming also ensures that the characteristic data relationship is properly matched between the solenoids, valve body, and transmission.

Solenoid characterization reprogramming is performed using the Service Programming System (SPS).

## Solenoid Reprogramming Procedure

Perform solenoid characterization reprogramming after one of the following service procedures:

**Note:** Select "Replace Transmission" at the MCVM Characterization selection screen.

- Replace transmission assembly

**Note:** Select "Replace Control Valve Solenoid Body" at the MCVM Characterization selection screen.

- Replace control valve solenoid body

**Note:** Select "Replace Solenoid" at the MCVM Characterization selection screen.

- Replace solenoid (currently not an available Service Procedure)

**Note:** Select "Refresh Characterization Data" at the MCVM Characterization selection screen.

- Replace TCM

To perform solenoid characterization after a transmission component replacement:

1. Document the new Transmission Unique Number (TUN). The TUN location may be found here: [Link target (target-id 278357-) not found] . Since the TUN can be difficult to access when the transmission is installed in the vehicle, ensure you document the 16-digit TUN prior to installing the transmission in the vehicle.
2. Use a generically available QR Code/data matrix scanner to obtain the Part Unique Number (PUN). The PUN location may be found here: [Link target (target-id 285256-) not found] . Before installing the control valve solenoid body onto the transmission, scan the data matrix.
3. Log into SPS.
4. Type the vehicle identification number (VIN).
5. Perform the SPS Transmission Control Module programming event.
   - Select "Transmission Control Module - Programming" to update TCM calibrations and Solenoid Characterization data.

     OR
   - Select "Transmission Control Module - MCVM Operations" to update Solenoid Characterization data only.
6. From the "MCVM (Mechanical Characterization and Virtual Matching) Operation Selection" screen, select the applicable service procedure to be performed. You will be prompted to provide the necessary Transmission Unique Number (TUN) when replacing a transmission part.

At this point, the system will read the VIN from the engine control module (ECM) using the multiple diagnostic interface (MDI) and then retrieve the applicable genealogy data tree from the cloud. This data tree accesses the original characterization data so that it may be updated with the new component information. The system acquires characterization data for the given TUN/PUN via the cloud and updates the genealogy tree. The TCM is updated with the correct solenoid characterization data, and the cloud is updated with the new genealogy relationship.

## Vehicle Wide Programming and Setup

**Important:**

- If ANY module is replaced, program the single module first prior to Vehicle Wide Programming.

- Verify the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Before downloading the update files, be sure the computer is connected to the internet through a network cable (hardwired). DO NOT DOWNLOAD or install the files wirelessly. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install a battery maintainer or power supply that provides a steady and stable voltage. Do not use a battery charger, as charging voltage will often fluctuate when connected to the vehicle. This may interrupt programming. If a battery maintainer is not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn OFF or disable systems that may put a load on the vehicle's battery such as interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.

## Description

Vehicle Wide Programming (VWP) is a new process to update software on GM Vehicles. It provides the ability via a single selection within Techline Connect to first identify which modules need updating and then proceed to updating affected modules (with some exceptions). The updating of modules is completed in parallel instead of forcing the technician to update one module at a time. This allows a more streamlined approach, reducing technician time and number of required steps.

## Diagnostic Aids

**Note:** Vehicle Wide Programming will only work with a wired MDI2 connection. It is also necessary to remove any wireless dongles from the computer being used as these will not allow the Vehicle Wide Programming to be selectable. If the Vehicle Wide Programming is not selectable with a wired MDI2, confirm it shows disconnected in SPS2 and then (if needed) exit out of TLC and log-in again.

- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install a GM Authorized Programming Support Tool to maintain system voltage. Refer to www.gmdesolutions.com for further information.  If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.
- Prior to starting any programming, all aftermarket devices should be removed from the DLC and USB devices disconnected from the USB ports.
- Follow the on-screen prompts regarding ignition power mode but ensure that anything that drains excessive power (exterior lights, HVAC blower motor, etc) is off.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.
- For the TLC application, service technicians need to always ensure that the power mode (ignition) is “ON” before reading the VIN from the vehicle’s VIN master module and that they do not select a VIN that is already in the TLC application memory from a previous vehicle.
- If the VIN that shows up in the TLC top center window after correctly reading the VIN from the vehicle does not match the VIN plate of the vehicle, manually type in the VIN characters from the vehicle VIN plate into the TLC top center window and use these for programming or reprogramming the subject module with the correct vehicle VIN and software and/or calibrations.
- Check for Preliminary information or Technical Service bulletins before programming.
- During programming you may be required to select multiple calibrations depending upon vehicle equipment. Have the vehicle build/RPO information (available through Investigate Vehicle History) available during the following procedure to ensure the correct calibrations are selected.

**Note:** Verify that the VIN displayed in the TLC left side drop down menu and the top center window match the VIN plate of the vehicle to be programmed prior to using Service Programming System 2 (SPS2) for programming or reprogramming a module.

## Reference Information

### Special Tools

- EL-52100 Multiple Diagnostic Interface 2 (MDI 2)

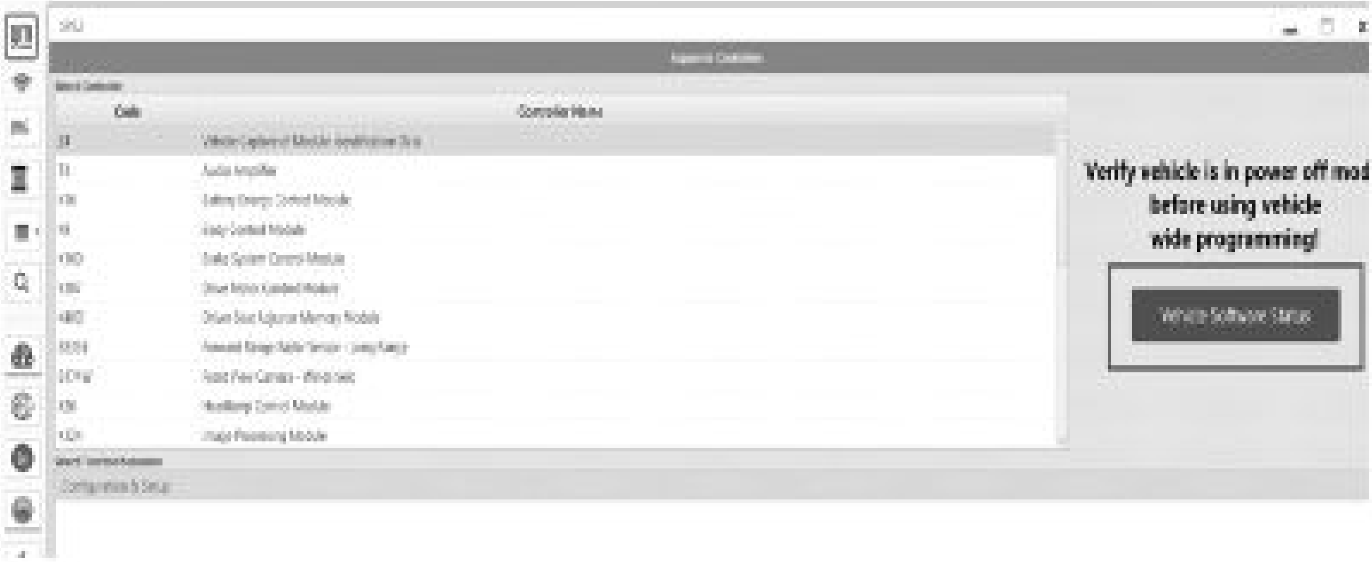
For equivalent regional tools, refer to *Special Tools 4-68*.

## Service Procedure

**Note:**

- Vehicle Wide Programming will only work with a wired MDI2 connection. It is also necessary to remove any wireless dongles from the computer being used as these will not allow the Vehicle Wide Programming to be selectable. If the Vehicle Wide Programming is not selectable with a wired MDI2, confirm it shows disconnected in SPS2 and then (if needed) exit out of TLC and log-in again.
- The screenshots below are an example of module programming and may not be indicative of the specific module that is being programmed. Module selection and VIN information have been blacked out.

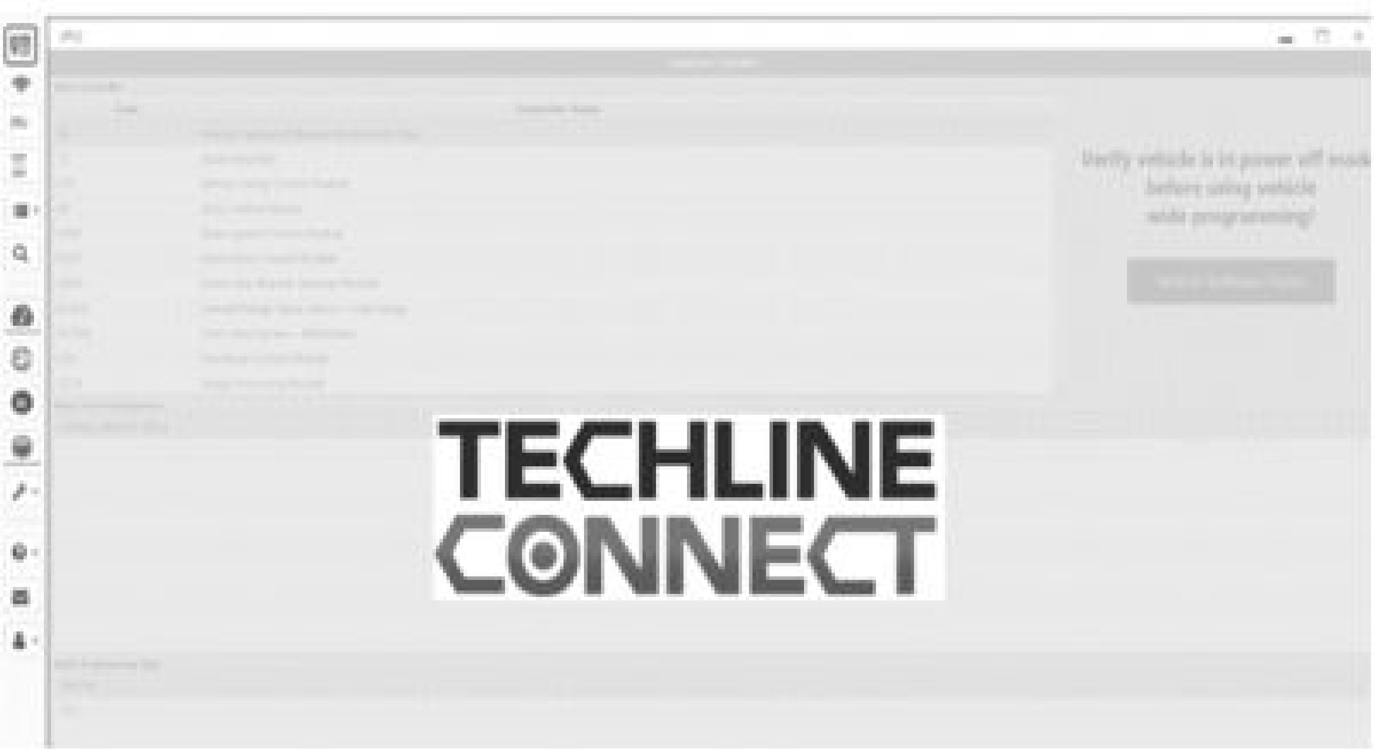
1. Prior to starting any programming, all aftermarket devices should be removed from the DLC and USB devices disconnected from the USB ports. Open SPS2 and enter the job card number, then click next.
2. To begin a Vehicle Wide Programming event, click on the blue button on the right side. If unable to select, verify the wired MDI2 connection and that there are no wireless dongles in the computer as stated above.



Verify vehicle is in power off mod
before using vehicle
wide programming!

6864802

3. An SPS3 page will open, and a vehicle software status routing will begin.



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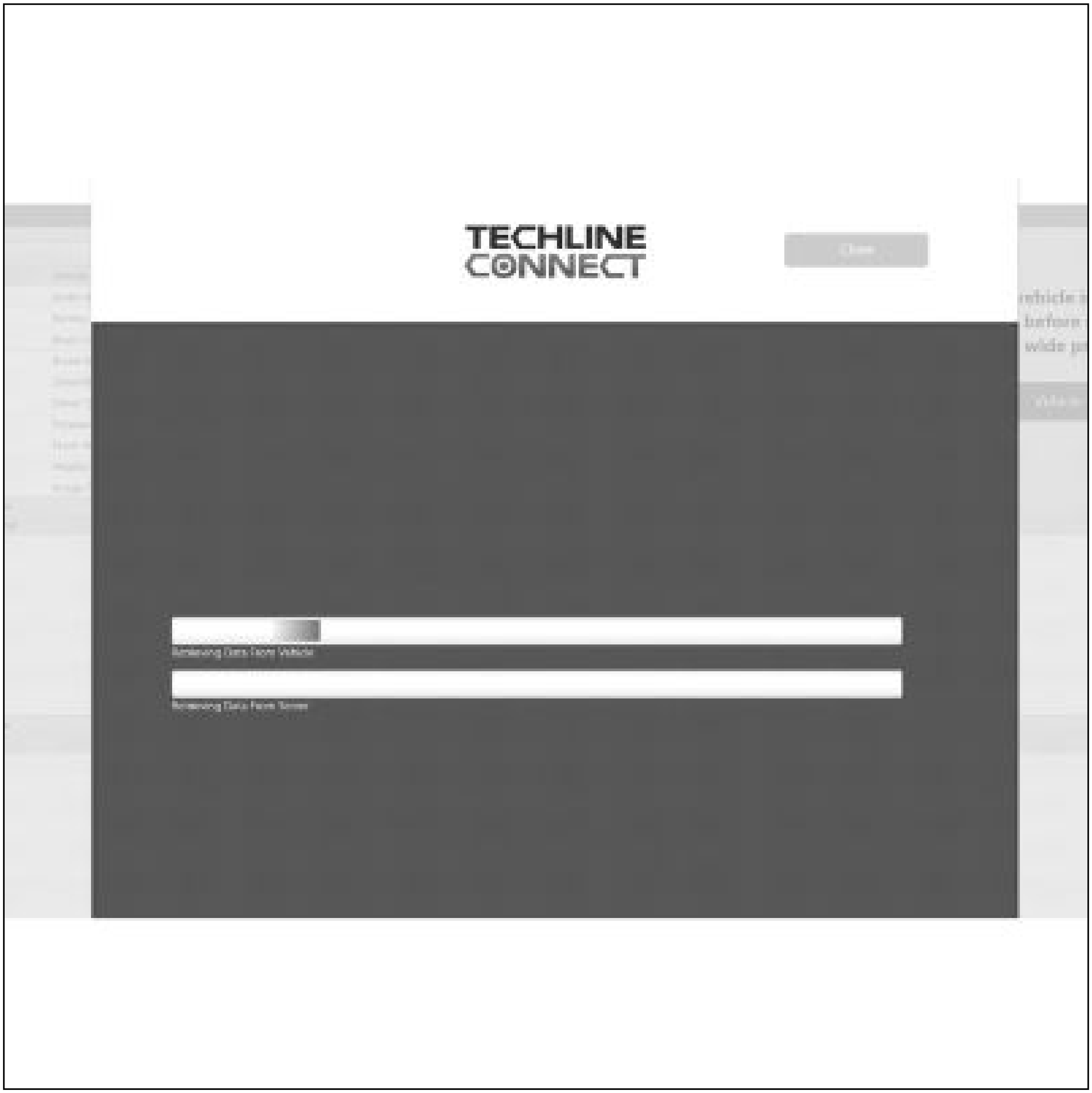

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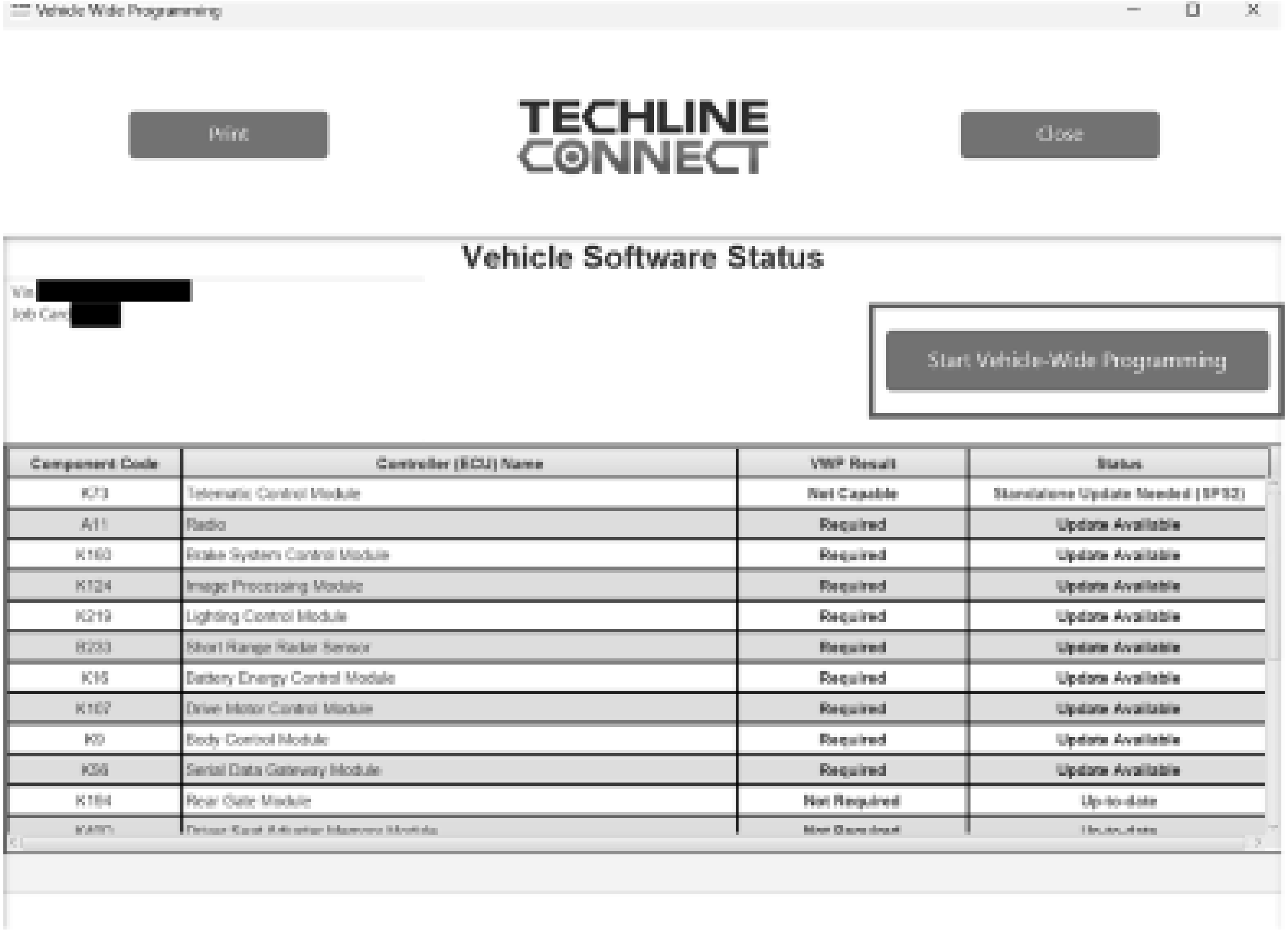
Below is a description of each Techline Connect bar.

- **Retrieving Data From Vehicle:** During this step, Techline Connect is retrieving current software information from the vehicle.
- **Retrieving Data From Sever:** Utilizing the VIN information, Techline Connect is retrieving the latest software information from General Motors.

**Note:** While it is saved automatically, it is recommended for the tech to print/capture anything noted as failed or out of date before exiting the screen.

4. Once complete, a Software Status Summary Screen will appear. This will list all modules that are up to date or may require manual update. It will also advise of any failures. To complete a VWP event, click on the blue button on the right side.



Vehicle Software Status

Vin [redacted]
Job Card [redacted]

| Component Code | Controller (ECU) Name | VWP Result | Status |
|---|---|---|---|
| K73 | Telematic Control Module | Not Capable | Standalone Update Needed (SPS2) |
| A11 | Radio | Required | Update Available |
| K160 | Brake System Control Module | Required | Update Available |
| K124 | Image Processing Module | Required | Update Available |
| K219 | Lighting Control Module | Required | Update Available |
| B233 | Short Range Radar Sensor | Required | Update Available |
| K16 | Battery Energy Control Module | Required | Update Available |
| K107 | Drive Motor Control Module | Required | Update Available |
| K9 | Body Control Module | Required | Update Available |
| K56 | Serial Data Gateway Module | Required | Update Available |
| K184 | Rear Gate Module | Not Required | Up-to-date |

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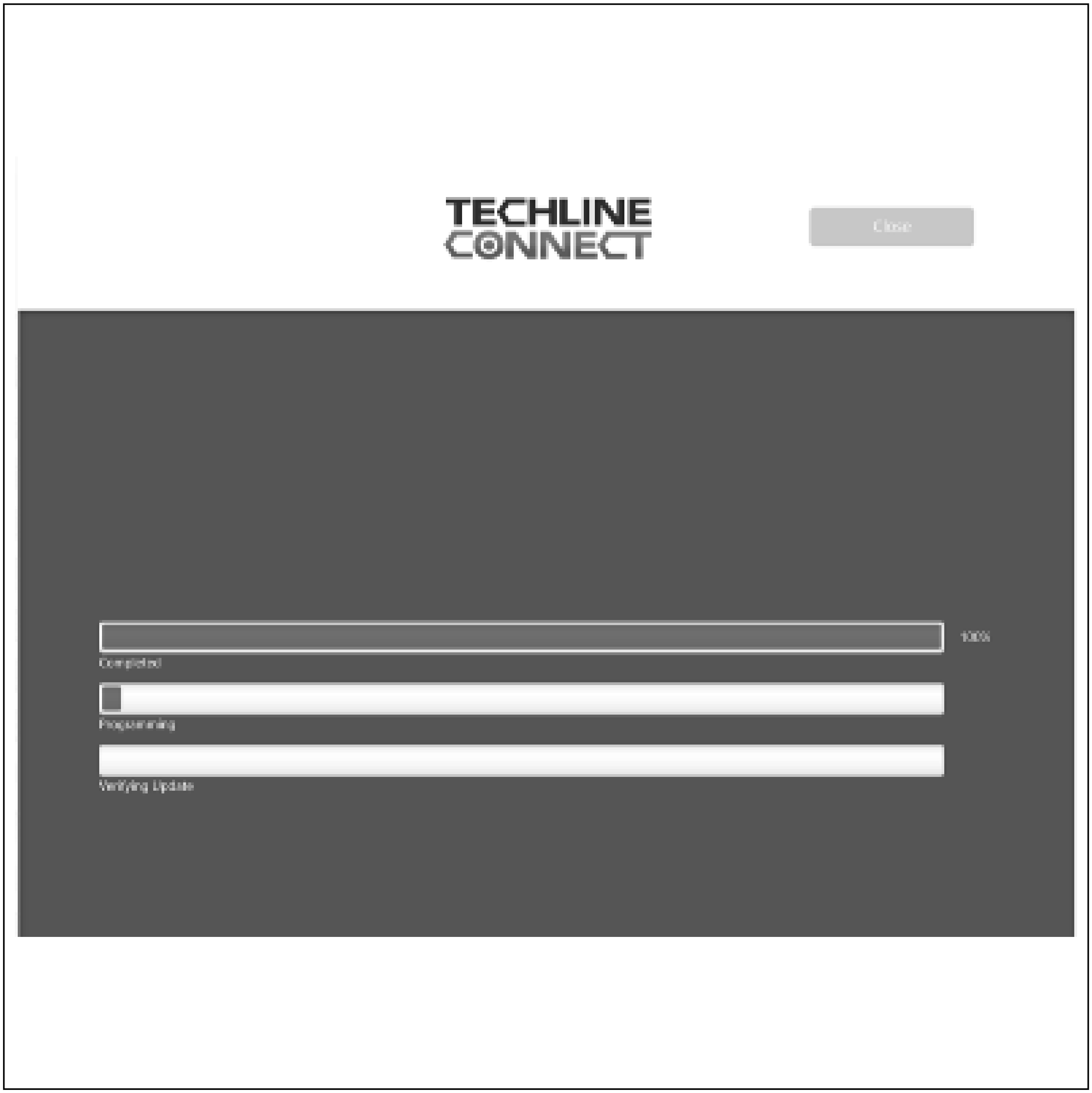
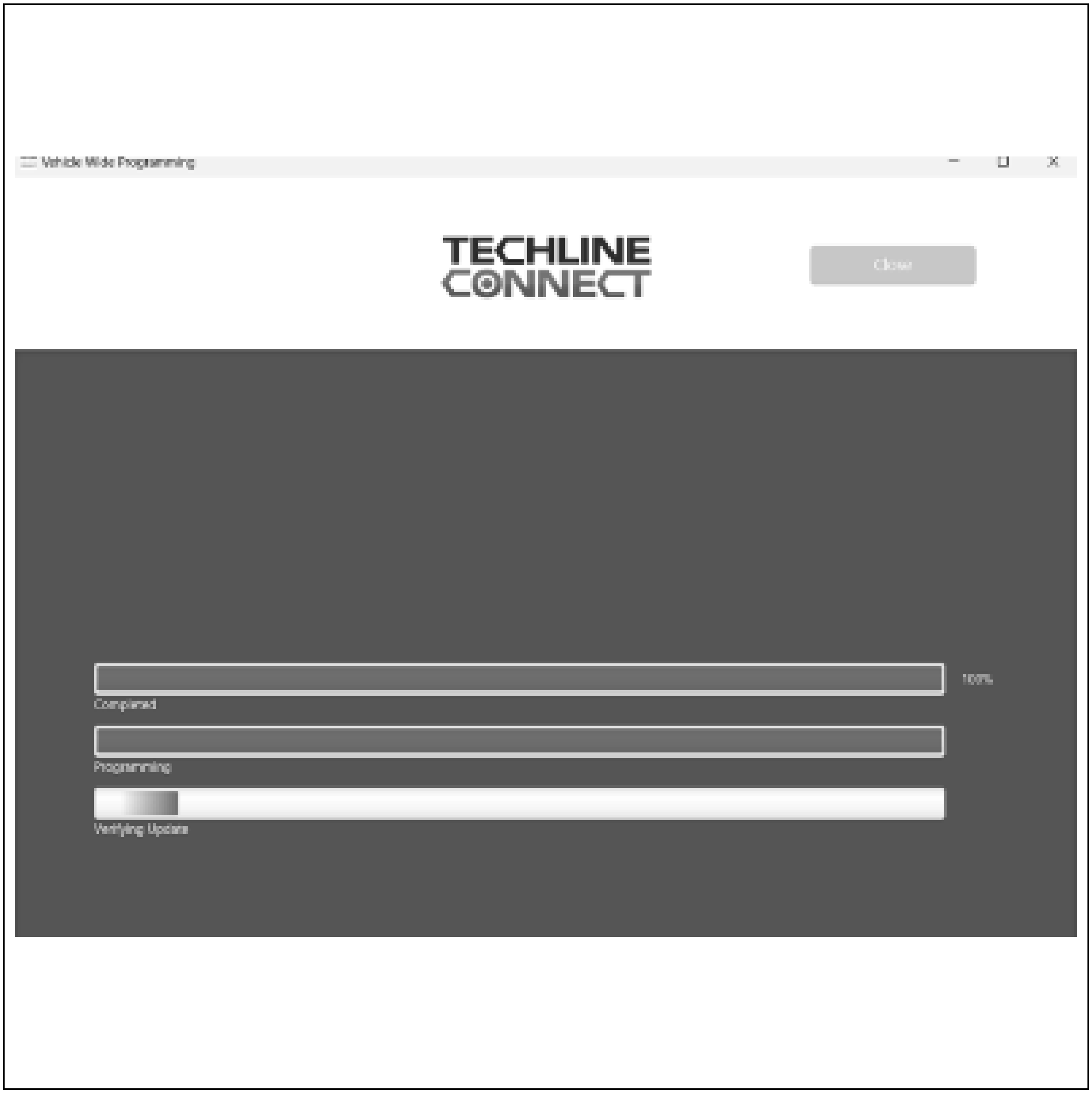
5. A VWP progress page will open and a VWP event will begin. Below is a description of each Techline Connect bar.
    - **Downloading:** Downloads required files for installation.
    - **Programming:** Installing updated software into the modules
    - **Verifying Update:** Performs final part comparison to verify programming completion.

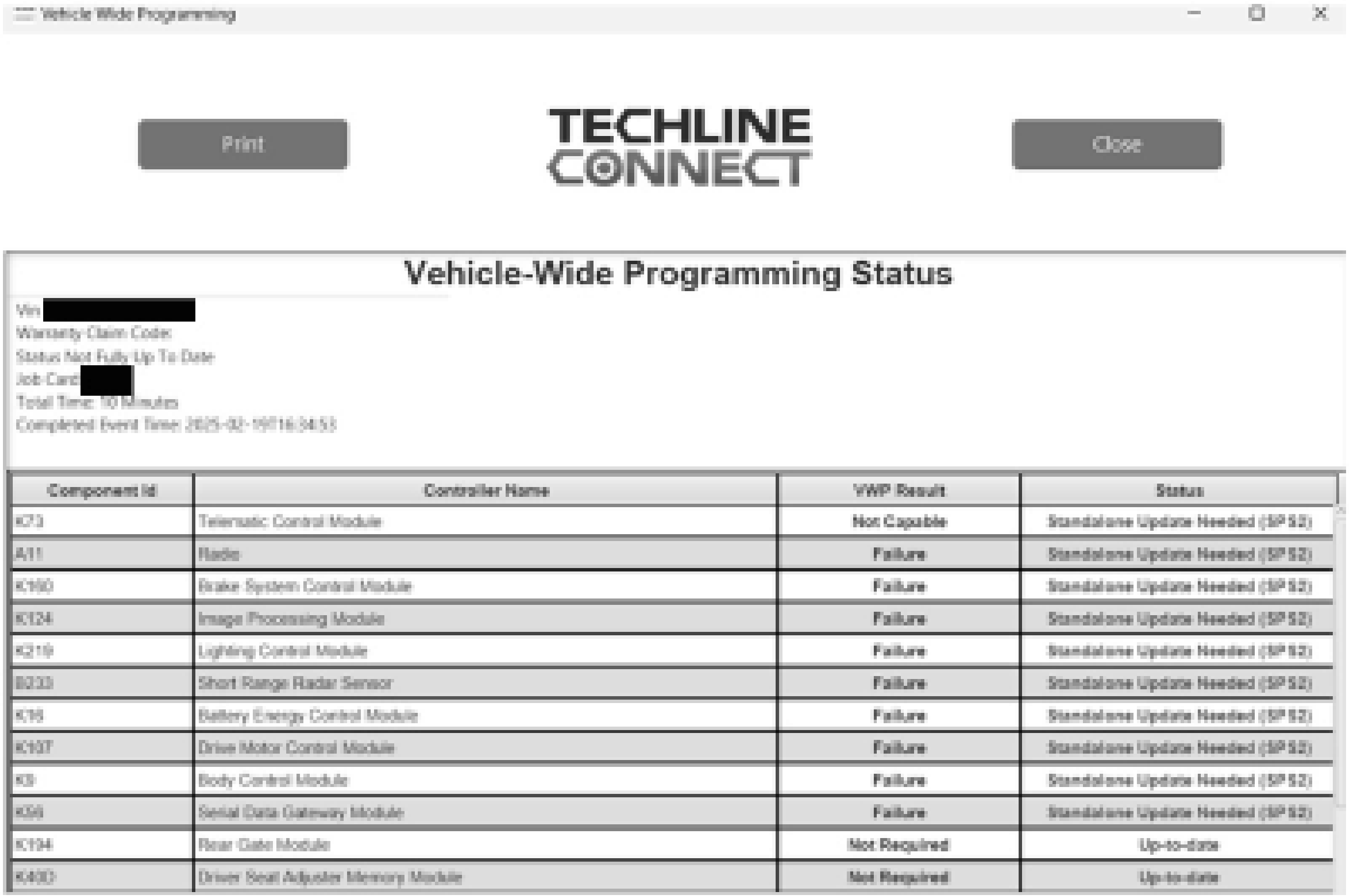

TECHLINE
CONNECT
Close
100%
Completed
Programming
Verifying Update

6864806


Vehicle Wide Programming
TECHLINE CONNECT
Close
100%
Completed
Programming
Verifying Update

6864808

6. Once complete, a Vehicle-Wide Programming Summary screen will appear, and a warranty claim code will populate. This will list all modules that are up to date or may be required to be updated still. Any failures will be shown at the top highlighted in red. The summary screen will also advise of any failures. While it is saved automatically, it is recommended for the tech to print/capture anything noted as failed or out of date before exiting the screen

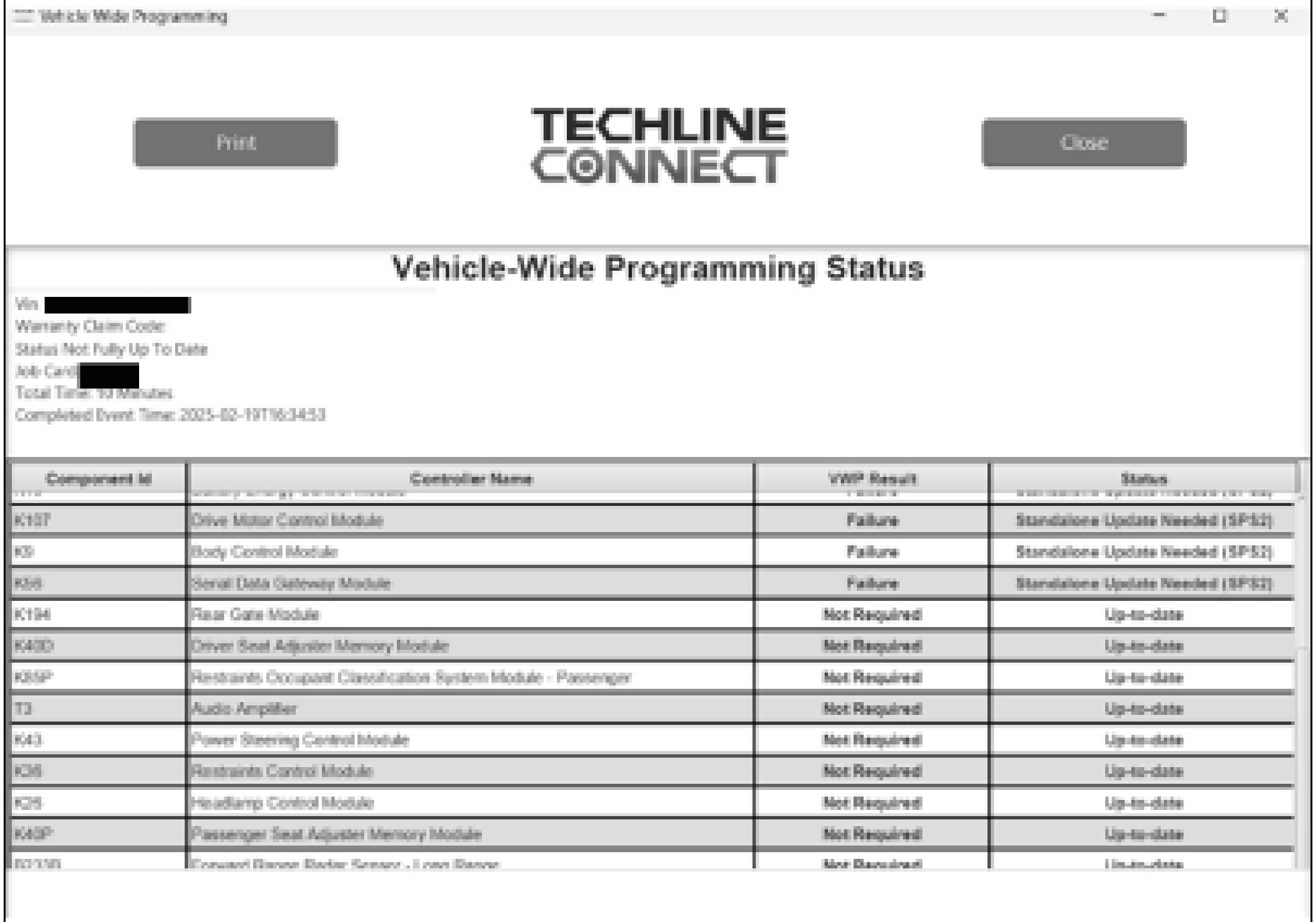


Vehicle-Wide Programming Status

Vin [redacted]
Warranty Claim Code:
Status Not Fully Up To Date
Job Card [redacted]
Total Time: 10 Minutes
Completed Event Time: 2025-02-19T16:34:53

| Component Id | Controller Name | VWP Result | Status |
|---|---|---|---|
| K73 | Telematic Control Module | Not Capable | Standalone Update Needed (SPS2) |
| A11 | Radio | Failure | Standalone Update Needed (SPS2) |
| K160 | Brake System Control Module | Failure | Standalone Update Needed (SPS2) |
| K124 | Image Processing Module | Failure | Standalone Update Needed (SPS2) |
| K219 | Lighting Control Module | Failure | Standalone Update Needed (SPS2) |
| B233 | Short Range Radar Sensor | Failure | Standalone Update Needed (SPS2) |
| K16 | Battery Energy Control Module | Failure | Standalone Update Needed (SPS2) |
| K107 | Drive Motor Control Module | Failure | Standalone Update Needed (SPS2) |
| K9 | Body Control Module | Failure | Standalone Update Needed (SPS2) |
| K56 | Serial Data Gateway Module | Failure | Standalone Update Needed (SPS2) |
| K194 | Rear Gate Module | Not Required | Up-to-date |
| K400 | Driver Seat Adjuster Memory Module | Not Required | Up-to-date |

6864809



Vehicle-Wide Programming Status

Vin: [redacted]
Warranty Claim Code:
Status: Not Fully Up To Date
Job Card: [redacted]
Total Time: 10 Minutes
Completed Event Time: 2025-02-19T16:34:53

| Component Id | Controller Name | VWP Result | Status |
|---|---|---|---|
| K197 | Drive Motor Control Module | Failure | Standalone Update Needed (SPS2) |
| K9 | Body Control Module | Failure | Standalone Update Needed (SPS2) |
| K56 | Serial Data Gateway Module | Failure | Standalone Update Needed (SPS2) |
| K194 | Rear Gate Module | Not Required | Up-to-date |
| K40D | Driver Seat Adjuster Memory Module | Not Required | Up-to-date |
| K85P | Restraints Occupant Classification System Module - Passenger | Not Required | Up-to-date |
| T3 | Audio Amplifier | Not Required | Up-to-date |
| K43 | Power Steering Control Module | Not Required | Up-to-date |
| K36 | Restraints Control Module | Not Required | Up-to-date |
| K26 | Headlamp Control Module | Not Required | Up-to-date |
| K40P | Passenger Seat Adjuster Memory Module | Not Required | Up-to-date |
| [illegible] | Forward Range Radar Sensor - Long Range | Not Required | Up-to-date |

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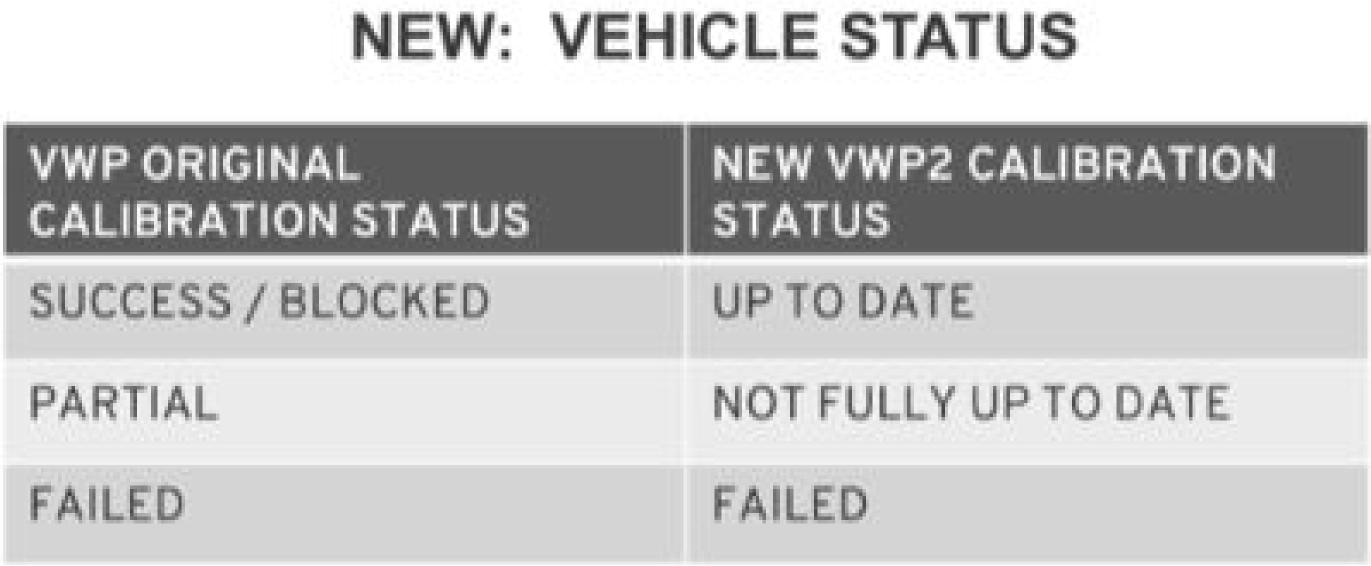
7. If the status is “Failed” or “Not Fully Up To Date”, please refer to “Unsuccessful Vehicle Wide Programming” section below.



NEW: VEHICLE STATUS

| VWP ORIGINAL CALIBRATION STATUS | NEW VWP2 CALIBRATION STATUS |
|---|---|
| SUCCESS / BLOCKED | UP TO DATE |
| PARTIAL | NOT FULLY UP TO DATE |
| FAILED | FAILED |

6864813

8. Use GDS2 to clear any DTCs after successfully programming

**Note:** The screenshots above are an example of module programming and may not be indicative of the specific modules that is being programmed. Module section and VIN information have been blacked out.

**Important:** To avoid warranty transaction rejections, you MUST record the warranty claim code provided on the Warranty Claim Code (WCC) screen shown below on the job card.

### Unsuccessful Vehicle Wide Programming

**Note:**

- Ensure the *EL-52100* (MDI 2) is used when programming the vehicle. Using the EL-47955 (MDI) will result in a programming failure.
- It may be necessary to use another *EL-52100* (MDI 2) and/or cables to verify proper operation to eliminate the possibility of faulty equipment.
- If Ethernet programming fails, ensure there is no fault in the Ethernet circuits between the X84 Data Link Connector and K56 Serial Data Gateway Module. Refer to [Link target (target-id 300812-) not found] to diagnose these Ethernet circuits.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Attempt to perform Vehicle Wide Programming a second time.
2. Verify no modules have failed programming during the VWP event.

⇒ **If ANY single module fails Vehicle Wide Programming:**

   2.1. Attempt to program the applicable module again. Refer to: [Link target (target-id 72864-) not found]

   2.2. If the module still cannot be programmed, contact Techline Customer Support Center (TCSC) for programming instructions.

⇒ **If ALL modules fail Vehicle Wide Programming**

   If the module still cannot be programmed, contact Techline Customer Support Center (TCSC) for programming instructions.

⇓ **If all applicable modules pass Vehicle Wide Programming:**

   Clear DTCs.

3. If a Vehicle Wide Programming blocked or successful Warranty Claim Code is required, Vehicle Wide Programming may be required to be performed again to receive an “Up to Date” status and obtain a Warranty Claim Code.

### Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: *Diagnostic Repair Verification 4-295*.

[Link target (target-id 72864-) not found] for control module replacement, programming, and setup.

# Description and Operation

## Over The Air Description and Operation

Each item in the list below represents topics covered in detail below.

- Over The Air (OTA) Description
- OTA Software Download
- Installing an Update
- Deferring or Declining an Update
- Unable to Complete
- Proper Battery Charging

### Over The Air (OTA) Description

The Over The Air (OTA) feature was designed to install vehicle software updates remotely. Remote software update is an in-vehicle feature that enables the installation of a software package to update certain modules without requiring service test equipment to be physically connected to the vehicle. Remote software updates will utilize a long range or short range connection from the host module to a remote IT system. There must be an active 4G LTE or WiFi connection to download and install vehicle software updates. The customer does not need an active OnStar subscription but they do need to accept the vehicle Terms and Conditions to be eligible to receive OTA vehicle software updates.

**Note:** Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

OTA software updates that are pushed to vehicles remotely continue to expand in frequency and use on GM models. Vehicles using the Global A electrical architecture can support three modules for OTA updates, such as the radio, OnStar, and Serial Data Gateway modules.

The new Vehicle Intelligence Platform (VIP) electrical architecture, introduced on some 2020 vehicles and beyond, powers a new electronic system that is capable of managing up to 4.5 terabytes of data processing power per hour, which is a fivefold increase in capability over the previous Global A electrical architecture. On vehicles using the VIP architecture, virtually all modules can support OTA updates, which means that the OTA software is not only for the infotainment system.

When an OTA update has been downloaded to a vehicle and is available to be installed, a message is displayed on the infotainment screen notifying the driver of the impending update. The message to accept and install an OTA update will not appear until the minimum values for the battery State of Charge (SOC) and Outside Ambient Temperature (OAT) are met.

## OTA Software Download

An OTA update can be pushed to a vehicle while the vehicle is parked or being driven. There is an option for notification to the driver that the software update is being downloaded to the vehicle, the default setting is set to off. Battery SOC and OAT values are not checked before a download. These checks are only performed once the software update is downloaded and ready to be installed.

The OTA software download can occur in increments. Download will not be paused while the vehicle is being driven, it continues in the background. If the vehicle is turned off the download will continue for a maximum of 10 minutes. If the download did not complete it will continue on the next ignition cycle from where it stopped.

## Installing an Update

Once the OTA software is downloaded, a message on the infotainment screen will display a prompt to accept the installation. The customer does not need to remain in the vehicle during the installation of the software. However, the vehicle cannot be driven during the installation and certain vehicle features may not be available. It’s not required for the ignition to be ON for the installation to begin.

Installation time will vary based on the size of the update. The average installation will take approximately 15 minutes. Depending on the module, it may take longer to complete. The “Accept” message on the infotainment screen will provide an estimation of the approximate installation time. The customer may also comment that the radio appears to stay on after exiting the vehicle.

## Deferring or Declining an Update

When an OTA update is downloaded, customers have the option to defer or decline the installation. The standard policy for OTA software updates is to set the customer notifications to 30 ignitions cycles. If the customer does not act upon the prompts within this counter, the update package is removed from the vehicle.

If a customer ignores the notification, the ignition cycle counter decreases by one immediately.

If the customer defers the installation by selecting the “Remind Me Later” option, the ignition cycle counter decreases by one, but it will not decrease again until after the customer-selected “Remind Me Later” period, regardless of the number of ignition cycles that occur during that period. For example, if 24 hours is selected for the next remind me time frame and 20 ignition cycles occurred, those 20 ignition cycles do not decrease the ignition cycle counter.

**Note:** For customer use case, standard operating procedure for campaign is to set the notifications to 30 ignitions cycles. If the Customer does not act upon the prompts within this counter, the package / invite is removed from the vehicle. In this scenario, we will wait 2 weeks and re-enroll back into the campaign. FYI: this counter can be selected from 1 to 999 ignition cycles when setting up the campaign.

If the OTA update installation is deferred by the customer, it can be installed at a later date through the Vehicle Software menu under Settings > System on the infotainment screen.

If the customer selects the “Decline Update” option, the update package is immediately removed from the vehicle. In this case, the vehicle will not be re-enrolled to receive the OTA update at a later date, unless the update is a Field Action. OTA updates will not be installed in a vehicle without a customer’s consent. One exception with Constraint Consent use case there is a “May day” counter set in the vehicle, typically 10 ignition cycles. The Customer has that many ignition cycles to complete the update. Upon using all notifications, the installation will take place once this counter has expired. This use case is only for Cyber Critical recall Field Actions and requires Global Safety Field Investigations approval to utilize this use case. To date, this use case has not been used for any field actions.

## Unable to Complete

There are a number of criteria that must be met in order to successfully complete the software update installation on a vehicle. The most common cause of being unable to complete an installation is the State of Charge (SOC) of the 12V battery. If the 12V battery does not meet the minimum SOC requirement of 70 percent or greater along with an Outside Ambient Temperature (OAT) greater than 14°F (-10°C), the OTA update installation will not occur. The colder the ambient air temperature is, the higher the target SOC becomes. To determine the battery SOC for VIP vehicles, go to BCM/12V Battery/Battery Sensor Module – State of Charge in GDS 2.

There may be other conditions that will affect an OTA update installation. If any of these conditions are present, a “Vehicle Conditions Not Ideal” message may display on the infotainment screen stating that conditions are not ideal to proceed with the update installation. These conditions do not indicate a failure; only that the vehicle does not meet all the criteria necessary to complete the OTA update installation.

Some customers may comment that the radio appears to stay on or is backlit after exiting the vehicle. If this occurs, it’s a telltale sign that an OTA update is in progress.

If an OTA fails to update ensure there is no 3rd party dongle connected to the DLC of the vehicle. This could block an OTA from completing.

### Proper Battery Charging

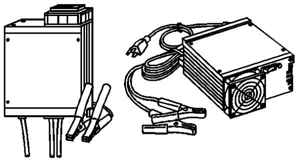
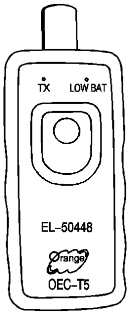
If a low battery SOC is preventing the OTA update installation, the 12V battery should be charged to meet the target SOC of 70 percent.

On some GM models, connecting the battery charger directly to the 12V battery posts will bypass the Battery Sensor Module, resulting in a default SOC value of 65 percent and a “Conditions Not Met” message.

**Note:** The Battery Sensor Module is attached directly to the battery negative terminal. It determines the battery condition by calculating the battery SOC, functions, and state of health, which is used to help determine if the 12V Stop/Start system will allow an Auto Stop when the vehicle has come to a stop. To properly charge the battery, the negative lead of the charger must be connected to chassis ground, and not directly to the negative battery post. Connecting to chassis ground allows current to flow through the Battery Sensor Module during charging as well as be monitored. The current cannot be monitored by the Battery Sensor Module if the negative lead of the charger is directly connected to the negative battery post.If a battery is improperly charged, the Battery Sensor Learn will be required to calibrate the Battery Sensor Module. With the ignition off, let the vehicle rest for a minimum of four hours without any interruptions (opening a door, using the key fob, etc.). Verify if the battery SOC is 70 percent or greater using GDS 2 before attempting to continue with an OTA update.

## Special Tools and Equipment

### Special Tools

| Illustration | Tool Number/ Description |
|---|---|
|  2223727 | EL 49642<br>SPS Programming Support Tool |
|  2563769 | EL 50448<br>Tire Pressure Monitor Sensor Activation Tool |
| 5443144 | EL 52100<br>Multi Diagnostic Interface 2 (MDI 2) |

| Illustration | Tool Number/ Description |
|---|---|
| <br>5331982 | EL 52545<br>Tire Pressure Monitor Sensor and RF Diagnostic Tool |
| <br>5608151 | EL 52800<br>Battery Charger/Tester |

# Vehicle Diagnostic Information

## Specifications

### A11 Radio: Scan Tool Information

A11 Radio: Scan Tool Information

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| **Data Display** | | | |
| • Infotainment System Status | — | Run | Indicates the status of the infotainment system. |
| • Rearview Camera Supply Current | — | Varies | Indicates the rearview camera supply current |
| • Rearview Camera Supply Voltage | — | 10V | Indicates the rearview camera supply voltage.. |
| • Control Module Temperature Sensor 1 | — | Varies | This displays the temperature reading of the control module temperature sensor 1. |
| • Control Module Temperature Sensor 2 | — | Varies | This displays the temperature reading of the control module temperature sensor 2. |
| • Control Module Operation Mode | — | Run | This displays the current operational mode of the control module. |
| • Battery Saver Mode | — | On/Off | Indicates if battery saver mode is active. |
| **Ethernet Bus Data** | | | |
| • Ethernet Bus Master Clock | — | Yes/No | Ethernet Bus Master Clock |
| • Rear Seat Infotainment Module to Radio Ethernet Data Received | — | Yes/No | Indicates if the radio has received data from the rear seat infotainment module. |
| • Telematics Control Module to Radio Ethernet Data Ready To Transmit | — | Yes/No | Indicates if the telematics control module ethernet data is ready to transmit to the radio. |
| • Ethernet Port 0 Receive Failure Count | — | Varies | Displays failures in counts (Rear Seat Infotainment) |
| • Ethernet Port 0 Transmit Failure Count | — | Varies | Displays failures in counts (Rear Seat Infotainment) |
| • Ethernet Port 1 Receive Failure Count | — | Varies | Displays failures in counts (Audio Amplifier) |
| • Ethernet Port 1 Transmit Failure Count | — | Varies | Displays failures in counts (Audio Amplifier) |
| • Ethernet Port 2 Receive Failure Count | — | Varies | Displays failures in counts (Central Gateway Module) |
| • Ethernet Port 2 Transmit Failure Count | — | Varies | Displays failures in counts (Central Gateway Module) |
| • Ethernet Port 3 Receive Failure Count | — | Varies | Displays failures in counts (Telematics Control Module) |
| • Ethernet Port 3 Transmit Failure Count | — | Varies | Displays failures in counts (Telematics Control Module) |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| • Ethernet Port 4 Receive Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 4 Transmit Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 5 Receive Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 5 Transmit Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 6 Receive Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 6 Transmit Failure Count | — | Varies | Displays failures in counts |
| • Ethernet Port 0 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 1 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 2 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 3 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 4 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 5 IP Address | — | Varies | Displays ethernet IP address |
| • Ethernet Port 6 IP Address | — | Varies | Displays ethernet IP address |
| **Configuration Data** | | | |
| • Manufacturer Enable Counter | — | Varies | Displays in counts |
| **Bluetooth Data** | | | |
| • Number of Bluetooth Devices Connected | — | Varies 1–10 | Indicates the number of Bluetooth paired to the vehicle. |
| • Bluetooth Device 1: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 1: Friendly Name | — | Varies | The scan tool displays a decimal value between 0 and 255. |
| • Bluetooth Device 2: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 2: Friendly Name | — | Varies | Displays the bluetooth phone to telematics communication interface control module status. |
| • Bluetooth Device 3: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 3: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 4: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| • Bluetooth Device 4: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 5: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 5: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 6: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 6: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 7: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 7: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 8: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 8: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 9: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 9: Friendly Name | — | Varies | Indicates the name given to the paired device |
| • Bluetooth Device 10: Connection Status | — | Varies | Indicates the device status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Device 10: Friendly Name | — | Varies | Indicates the name given to the paired device |
| **GPS Data** | | | |
| Longitude at Last GPS Fix | — | Varies | Indicates the longitude coordinates at the last GPS signal reveived |
| Latitude at Last GPS Fix | — | Varies | Indicates the latitude coordinates at the last GPS signal reveived |
| **Audio Data** | | | |
| Left Rear Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Right Front Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Left Front Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Right Rear Audio Output | — | Active/Not Active | Indicates the status of the audio output |
| Current AM Frequency | — | Varies | Indicates the current frequency the radio is set to |
| Current FM Frequency | — | Varies | Indicates the current frequency the radio is set to |
| **Auxiliary Input Data** | | | |
| Infotainment Control Switch, Switch 1 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 2 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 3 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 4 | — | Yes/No | Indicates if the switch is pressed |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Infotainment Control Switch, Switch 5 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 6 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 7 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Switch 8 | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Knob 1 Push Switch | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Knob 1 Rotary Position | — | Varies | Displays the counts when the knob is turned |
| Infotainment Control Switch, Knob 2 Push Switch | — | Yes/No | Indicates if the switch is pressed |
| Infotainment Control Switch, Knob 2 Rotary Position | — | Varies | Displays the counts when the knob is turned |

### A11 Radio: Scan Tool Output Controls

| Output Control | Description |
|---|---|
| **Display Check** | |
| Info Display Dimming | Allows control of the info display dimming |
| Backlight Dimming | Allows control of the backlight dimming |
| Rearview Camera Display | Allows the rearview camera to be turned on and off |
| **Radio Controls** | |
| Radio Tuner AM Frequency | Allows control of the AM tuner frequency |
| Radio Tuner FM Frequency | Allows control of the FM tuner frequency |

## B174W Front View Camera - Windshield: Scan Tool Information (with UGN)

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| Adaptive Cruise Control Disengage Hisotry Data | – | – | Refer to: Driver Assistance Systems Disable History Conditions |
| Adaptive Cruise Control Disengage Hisotry Data | – | – | Refer to: Driver Assistance Systems Disable History Conditions |
| Front Impact Mitigation Disable History Data | – | – | Refer to: Driver Assistance Systems Disable History Conditions |
| Lane Keep Assist Disable History | – | – | Refer to: Driver Assistance Systems Disable History Conditions |
| Parking Assist Disable History Data | – | – | Refer to: Parking Assist Systems Disable History Conditions |
| Rear Impact Mitigation Disable History Data | – | – | Refer to: Driver Assistance Systems Disable History Conditions |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Trailer System Induced Disable History Data | – | – | Refer to: Driver Assistance Systems Disable History Conditions |
| Vehicle Dynamic System Disable History Data | – | – | Refer to: Driver Assistance Systems Disable History Conditions |

### B174W Front View Camera - Windshield: Scan Tool Information (without UGN)

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |

### Data Display

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Frontview Camera Module Learn Mode Status | – | Learn Successful | The scan tool displays the current learn status of the B174W Frontview Camera - Windshield |
| Frontview Camera Module Learn Mode Progress | – | 100% | The scan tool displays the current learn progress of the B174W Frontview Camera - Windshield as a percentage |
| Yaw Rate | – | Varies | The scan tool displays the yaw offset of the B174W Frontview Camera - Windshield |
| Traffic Sign Memory | – | Varies | The scan tool displays if traffic sign memory is Active or Off |

### B218L Side Obstacle Detection Control Module - Left: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |

### B218R Side Obstacle Detection Control Module - Right: Scan Tool Information

#### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |

## B233B Forward Range Radar Sensor - Long Range: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |

### Data Display

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Learn Status | – | Complete | The scan tool displays the current learn status of the B233B Forward Range Radar Sensor – Long Range |

### Configuration/Reset Functions

| Parameter | Definition |
|---|---|
| **Operating Conditions:** Ignition ON | |
| Long Range Radar Sensor Module Learn | The scan tool will being B233B Forward Range Radar Sensor – Long Range learn |

## B233LF Short Range Radar Sensor - Left Front: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |

## B233LR Short Range Radar Sensor - Left Rear: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |

## B233RF Short Range Radar Sensor - Right Front: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |

## B233RR Short Range Radar Sensor - Right Rear: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |

## B233SL Short Range Radar Rear Side Sensor - Left: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |

## B233SR Short Range Radar Rear Side Sensor - Right: Scan Tool Information

### Identification Information

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Last Dealer Code or Scan Tool Serial Number | – | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number |
| Application Software Part Number 1 | – | Varies | The scan tool displays the Application Software Part Number 1 |
| Application Software Part Number 1 Alpha Code | – | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code |
| Calibration Part Number 1 Alpha Code | – | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code |
| Manufacturer’s Traceability Number | – | Varies | The scan tool displays the Manufacturer’s Traceability Number |
| Module Diagnostic Address | – | Varies | The scan tool displays the Software Module 1 Identifier |
| Base Model Part Number | – | Varies | The scan tool displays the Base Model Part Number |
| Manufacturer Enable Counter | – | Varies | The scan tool displays the Manufacturer Enable Counter |
| Calibration Part Number 1 | – | Varies | The scan tool displays the Calibration Part Number 1 |
| End Model Part Number | – | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number Alpha Code | – | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| Date Programmed | – | Varies | The scan tool displays the Date Programmed |
| End Model Part Number Alpha Code | – | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Diagnostic Data Identifier | – | Varies | The scan tool displays the Diagnostic Data Identifier |
| Vehicle Identification Number (VIN) | – | Varies | The scan tool displays the vehicle VIN number |

## K4 Assist Step Control Module: Scan Tool Information

### Scan Tool Data Parameters

| Parameter | Expected Value | Description |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Manual Deploy Status | Normal | Scan tool displays Unknown, Off, Extend to Passenger Position - Left and Right, or Extend to Cargo Position - Left and Right. |

| Parameter | Expected Value | Description |
|---|---|---|
| Left Assist Step Motor Current | 0 A | Scan tool displays the current amperage of the left assist step motor. |
| Left Assist Step Position | Retracted Position - Left | Scan tool displays Retracted Position - Left, Extend to Passenger Position - Left, Extend to Cargo Position - Left, or Extend to Service Position - Left. |
| Left Assist Step Position | Count Value | Scan tool displays the current left step position count. |
| Left Assist Step System Status | Retracted Position - Left | Scan tool displays Retracted Position - Left, Extend to Passenger Position - Left, Extend to Cargo Position - Left, or Extend to Service Position - Left. |
| Left Assist Step Learn Status | Yes | Scan tool displays Learned if the left step learn has been completed. |
| Left Front Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Left Rear Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Right Assist Step Motor Current | 0 A | Scan tool displays the current amperage of the right assist step motor. |
| Right Assist Step Position | Retracted Position - Right | Scan tool displays Retracted Position - Right, Extend to Passenger Position - Right, Extend to Cargo Position - Right, or Extend to Service Position - Right. |
| Right Assist Step Position | Count Value | Scan tool displays the current right step position count. |
| Right Assist Step System Status | Retracted Position - Right | Scan tool displays Retracted Position - Right, Extend to Passenger Position - Right, Extend to Cargo Position - Right, or Extend to Service Position - Right. |
| Right Assist Step Learn Status | Yes | Scan tool displays Learned if the right step learn has been completed. |
| Right Front Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Right Rear Door Ajar Switch | Inactive | Scan tool displays Inactive if the door is shut, and Active if the door is open. |
| Headlamp Switch Signal | Off | Scan tool displays Unknown, Off, Auto, Park Lamps, Headlamp. |
| Exterior Lighting | Inactive | Scan tool displays Inactive or Active |
| System Power Mode | Varies | Scan tool displays Off, Accessory, Run, Start Request, or Propulsion Active. |
| Battery Voltage | Varies | Current voltage of battery. |

### Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Assist Step Courtesy Lamp | Turns the assist step courtesy lamp ON and OFF. |
| Extend to Passenger Position - Right | Commands the right assist step to the deployed position. |
| Extend to Service Position - Right | Commands the right assist step to the fully extended service position. |
| Retracted Position - Right | Commands the right assist step to the retracted position. |
| Extend to Passenger Position - Left | Commands the Left assist step to the deployed position. |
| Extend to Service Position - Left | Commands the Left assist step to the fully extended service position. |
| Retracted Position - Left | Commands the Left assist step to the retracted position. |

## K5 Automatic Level Control Module: Scan Tool Information

The K5 Automatic Level Control Module scan tool data parameters list contains all automatic level control related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

### Automatic Level Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description (Range) |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Air Suspension Reservoir Pressure | Normal Ride Height | 18 bar | The scan tool displays the Air Suspension Reservoir Pressure (2–20 bar). |
| Left Front Air Spring Pressure | Normal Ride Height | 6.6–8.6 bar | The scan tool displays the pressure inside the Left Front Air Spring (2–11 bar). |
| Left Front Position Offset From Trim | Normal Ride Height | 0mm | The scan tool displays amount offset from Normal Ride Height of the left front position sensor (-25–50mm). |
| Left Front Suspension Position Sensor Trim Height | Normal Ride Height | 53% | The scan tool displays the Left Front Position Sensor Duty Cycle (0–100%) |
| Left Rear Air Spring Pressure | Normal Ride Height | 5.2–6 bar | The scan tool displays the pressure inside the Left Rear Air Spring (2–11 bar). |
| Left Rear Position Offset From Trim | Normal Ride Height | 0mm | The scan tool displays amount offset from Normal Ride Height of the left rear position sensor (-25–50mm). |
| Left Rear Suspension Position Sensor Trim Height | Normal Ride Height | 51% | The scan tool displays the Left Rear Position Sensor Duty Cycle (0–100%) |
| Right Front Air Spring Pressure | Normal Ride Height | 6.6–8.6 bar | The scan tool displays the pressure inside the Right Front Air Spring (2–11 bar). |
| Right Front Position Offset From Trim | Normal Ride Height | 0mm | The scan tool displays amount offset from Normal Ride Height of the right front position sensor (-25–50mm). |
| Right Front Suspension Position Sensor Trim Height | Normal Ride Height | 53% | The scan tool displays the Right Front Position Sensor Duty Cycle (0–100%) |
| Right Rear Air Spring Pressure | Normal Ride Height | 5.2–6 bar | The scan tool displays the pressure inside the Right Rear Air Spring (2–11 bar). |
| Right Rear Position Offset From Trim | Normal Ride Height | 0mm | The scan tool displays amount offset from Normal Ride Height of the right rear position sensor (-25–50mm). |
| Right Rear Suspension Position Sensor Trim Height | Normal Ride Height | 51% | The scan tool displays the Right Rear Position Sensor Duty Cycle (0–100%) |
| Vehicle Level Control Compressor Temperature | — | Varies | The scan tool displays the current temperature of the Automatic Level Control Compressor (-40–125°C). |

### Automatic Level Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Air Spring Deflation | Short Term Deflate — Opens the selected valve for up to a 2 second to allow visible movement. This verifies that the spring can properly deflate.<br>Complete Deflate — When vehicle is raised off the ground or an individual corner is jacked/raised up, opens the valve until selected air spring is approximately 2 Bar. Used to deflate the selected air spring for replacement or testing. |
| Deflate Air Suspension Reservoir | Opens selected valve until pressure is low enough for Reservoir Removal |
| Equalize All Air Spring Pressures | Equalizes spring pressures on the selected axle. Function runs for up to 12 seconds. Used to equalize pressures across axle after component replacement. |
| Short Term Inflate | Opens the selected valve for up to 2 seconds, allowing selected corner to inflate and see that air moves into air spring. Used for testing air spring inflation and inflating air spring after repair or replacement. |
| Pneumatic Connection Pressure Test | Tests the pneumatic connection from the Pneumatic Control Unit to the Air Compressor. Used any time the airline is opened or replaced to verify there are no leaks. |
| Test Compressor Pneumatic Operation | Commands the Air Suspension Leveling Compressor to On for a up to 20 seconds. Used to verify the compressor motor/pump/exhaust valve mechanical, electrical, and pneumatic operation. |

### Automatic Level Control Module Scan Tool Configuration/Reset Functions

| Configuration/Reset Function | Description |
|---|---|
| Air Spring Deflation | Opens the selected valve for up to a 2 second to allow visible movement. Used to deflate the selected air spring for replacement or testing. |
| Level Vehicle to Target Height | Commands the vehicle to the Normal Ride Height. Used to return vehicle to Normal Ride Height after performing tests or repairs. |
| Trim Height Settings | Allows vehicle trim height to be set. Used after ECU reflash or component replacement. |

## K9 Body Control Module: Scan Tool Information

### Body Control Module — 12V Battery Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Battery Capacity | — | Varies | The scan tool displays Ah (Amp hr). Ah/20 is the amount of current a battery can supply for 20hrs until the voltage drops to 10.5V. |
| Battery Current | — | Varies | The scan tool displays Amps. This is the current flowing through the Battery Sensor Module. |
| Battery Current During Autostop | — | Varies | The scan tool displays Amps. This is the amperage flowing out of battery to maintain vehicle systems during an autostop. |
| Battery Sensor Internal Temperature Sensor | — | Varies | The scan tool displays temperature in Celsius. |
| Battery Sensor Module - Battery Nominal Resistance | — | Varies | The scan tool displays mOhm. This is the internal impedance of the 12V battery as measured by the Battery Sensor Module. |
| Battery Sensor Module - Battery Voltage | — | Varies | The scan tool displays Volts. This is the actual 12V battery voltage as measured by the Battery Sensor Module. |
| Battery Sensor Module - Data Received | — | Yes | The scan tool displays Yes or No. This value indicates that information has been received by the Body Control Module from the Battery Sensor Module. |
| Battery Sensor Module - Ignition Off Minimum Battery State of Charge | — | Varies | The scan tool displays percentage (%). |
| Battery Sensor Module - Ignition Off Minimum Battery Voltage | — | Varies | The scan tool displays battery voltage in volts (V). This is the lowest 12V battery voltage recorded during key off. |
| Battery Sensor Module - Maximum Cranking Current | — | Varies | The scan tool displays maximum cranking current in amperes (A). This is the actual peak value of amps measured by the Battery Sensor Module on the previous engine crank event. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Battery Sensor Module - Minimum Cranking Voltage | — | Varies | The scan tool displays minimum cranking voltage in volts (V). This is the actual lowest voltage measured by the Battery Sensor Module on the previous engine crank event. |
| Battery Sensor Module - Open Circuit Voltage | — | Varies | The scan tool displays Volts. |
| Battery Sensor Module - Predicted Minimum Crank Voltage | — | Varies | The scan tool displays Volts. This is a value calculated by the Battery Sensor Module that predicts the minimum voltage during the next engine crank event. |
| Battery Sensor Module - State of Charge | — | Varies | The scan tool displays percentage (%). This is a measurement of the charge level compared to a fully charged 12V battery as measured by the Battery Sensor Module. |
| Battery Sensor Module State of Charge Error | — | Varies | The scan tool displays percentage (%). |
| Battery Sensor Module - State of Charge Status OK | — | — | — |
| Battery Sensor Module - State of Charge Variance | — | Varies | The scan tool displays percentage (%). |
| Battery Sulfation Protection Mode | — | — | — |
| Battery Type | — | Default | The scan tool displays Default, Flooded Battery, AGM Battery, Enhanced Flooded Battery, or Lithium Battery. |
| Battery Voltage Too Low | — | No | The scan tool displays Yes or No. |
| Charge Recovery Mode Active - Battery Saver Mode | — | 0 | The scan tool displays a numeric value. This indicates the level that battery saver mode is operating at. This provides an indication of what actions are being taken. |
| Charge Recovery Mode Active - Battery Disconnected | — | — | — |
| Charge Recovery Mode Active - Charge Efficiency Off | — | — | — |
| Charge Recovery Mode Active - Service Tool Request | — | — | — |
| Charge Recovery Mode Active - State of Charge Loss | — | — | — |
| Charge Recovery Mode Active - Vehicle Inactive Too Long | — | — | — |
| Low-Voltage Battery Previous State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Net Battery Amp Hours | — | Varies | The scan tool displays Ah. This is the sum of Amp per hour as measured through the Battery Sensor Module. |
| Net Battery Amp Hours Charged | — | Varies | The scan tool displays Ah. |
| Net Battery Amp Hours Discharged | — | Varies | The scan tool displays Ah. |
| Parasitic Current Greater than 0mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -5.0A to -10.0A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current 0mA to -10mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -1.25A to -2.5A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -10mA to -20mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -40mA to -80mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -20mA to -40mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -80mA to -160mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -10.0A or less Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -2.5A to -5.0A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -640mA to -1.25A Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -160mA to -320mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |
| Parasitic Current -320mA to -640mA Counter | — | Varies | The scan tool displays min. This is a counter that tracks if the current during ignition off is within a particular range. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Stop/Start Mode | — | — | — |
| Voltage Drop During Autostop | — | Varies | The scan tool displays Volts. This is a measurement of the amount that the battery voltage has dropped during an autostop. |

## Body Control Module — Brake Pedal Position Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Brake Pedal Position Sensor Fully Released Learn Status | — | Yes | The scan tool displays Yes or No. |
| Brake Pedal Initial Travel Position Achieved | — | No | The scan tool displays Yes or No. |
| Brake Pedal Position Switch Circuit Signal | — | — | — |
| Extended Travel Brake Pedal Position Signal | — | — | — |
| Extended Travel Brake Pedal Position Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Torque Converter Clutch/ Cruise Control Brake Pedal Position Switch | — | Inactive | The scan tool displays Active or Inactive. |

## Body Control Module — Chassis Control Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Drive Mode Select Switch 1 | — | Inactive | The scan tool displays Inactive, Switch 1, Switch 2, Switch 3, Switch 4, Switch 5, Switch 6, Switch 7, Switch 8, Open/Short to Battery, Short to Ground, or Invalid. This is the primary bank of switches which the vehicle operator interfaces with for different selectable vehicle operating modes such as Sport Mode, Fuel Economy Mode... |
| Drive Mode Select Digital Switch 1 | — | Inactive | The scan tool displays Active or Inactive. This is a discrete switch the vehicle operator interfaces with to select vehicle operating modes such as Sport Mode, Fuel Economy Mode... |
| Driver Shift Control Mode Switch | — | Inactive | The scan tool displays Upshift, Downshift, Inactive, or Invalid. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Hill Descent Control Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Traction Control Switch | — | Inactive | The scan tool displays Active or Inactive. This indicates the state of the input that enables or disables the traction control system, which is a system designed to prevent loss of traction (and therefore the control of the vehicle) when excessive throttle or steering is applied by the driver. |

## Body Control Module — Content Theft Deterrent Alarm Trigger — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Content Theft Deterrent Alarm Status | — | Has Not Alarmed - No Alarm | The scan tool displays Has Not Alarmed - No Alarm, Alarming - Alarm, or Has Alarmed - Alarm Active. This indicates if the vehicle content theft deterrent system is in alarm mode or not. |
| Content Theft Deterrent Indicator | — | Off | The scan tool displays Off, On, Flashing Slow, or Flashing Fast. This is the illuminating lamp on the instrument cluster that indicates if the vehicle security system is active or not. |
| Current Content Theft Deterrent Trigger | — | No Information/None | This indicates what factor led to the activation of the content theft deterrent system. |
| Content Theft Deterrent Trigger History 1 | — | No Information/None | This indicates the factor that led to the first history reason for activation of the content theft deterrent system. |
| Content Theft Deterrent Trigger History 2 | — | No Information/None | This indicates the factor that led to the second history reason for activation of the content theft deterrent system. |
| Content Theft Deterrent Trigger History 3 | — | No Information/None | This indicates the factor that led to the third history reason for activation of the content theft deterrent system. |
| Glass Breakage | — | Not Detected | The scan tool displays Not Detected or Detected. This parameter indicates the damage to glass as a result to breaking. Glass divides into pieces as a result of a sudden or violent action. |
| Horn Relay Command | — | Inactive | The scan tool displays Active or Inactive. This refers to a request to initiate the sound for a vehicle's loud warning signal. This is used to display whether the Body Control Module is commanding the horn relay to be on or off. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Liftglass | — | Inactive | The scan tool displays Active or Inactive. The liftglass ajar warning light will be illuminated when the liftglass is not properly closed. This parameter indicates if the liftglass active or inactive. |
| Power Sounder Content Theft Deterrent Alarm Module Command | — | No Alarm | The scan tool displays No Alarm or Alarm Active. The power sounder is part of the vehicle's theft deterrent system. This parameter shows if the power sounder is commanded active (monitoring for vehicle theft attempt) or not. |
| Power Sounder Content Theft Deterrent Alarm Module Internal Battery State of Charge | — | OK | The scan tool displays OK or Not OK. This parameter describes the internal battery state of charge in the Power Sounder Content Theft Deterrent Alarm Module. |
| Rear Closure Unlock Command | — | Inactive | The scan tool displays Active or Inactive. This parameter for the rear closure unlock relay or unlock actuator will display On/Off upon the door being commanded to unlock. Commanded ON is when the Body Control Module energizes the rear closure unlock relay/actuator to unlock the door. |
| Security Indicator Command | — | Inactive | The scan tool displays Active or Inactive. Security Indicator Command refers to the command that is sent out by the module to turn the lamp (symbolic icon) on which acts as an indicator for the active state of the security system. |
| Security Siren Command | — | Not Requested | The scan tool displays Not Requested or Disarmed. This is the serial data command to activate the output circuit for the alarm siren. Alarm siren is like a horn, but will activate during a theft event to warn away intruders. |
| Ultrasonic Intrusion Sensor | — | Disarmed | The scan tool displays Armed or Disarmed. The rear integration module supplies a low side drive output interface to the Intrusion and Inclination Sensor. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Ultrasonic Intrusion Sensor Disable Switch Signal | — | Inactive | The scan tool displays Active or Inactive. This is the switch which enables/disables the Ultrasonic Intrusion Sensor of the vehicle. |
| Ultrasonic Intrusion Sensor Malfunction | — | No | The scan tool displays Yes or No. This sensor detects an unauthorized opening of the vehicle's cabin by sending and receiving ultrasonic waves. This indicates the state of the sensor to fail to operate normally. |

### Body Control Module — Electric Power Management Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Battery Current | — | Varies | The scan tool displays Amps. This is the current flowing through the Battery Sensor Module. |
| Battery Saver Mode | — | Off | The scan tool displays Off, Assembly Plant Mode, Transport Mode, or Storage Mode. |
| Battery Saver Mode Ignition Off - Battery Voltage less than 11.6V | — | False | The scan tool displays True or False. This will set with key off if battery voltage drops below 11.6V |
| Battery Saver Mode Ignition Off - Battery Voltage less than 12.0V | — | False | The scan tool displays True or False. This will set with key off if battery voltage drops below 12.0V. |
| Battery Saver Mode Ignition Off - Parasitic Current 100mA or greater | — | False | The scan tool displays True or False. This will set with key off if parasitic current is greater than 100mA. |
| Battery Saver Mode Ignition Off - Parasitic Current 1A or greater | — | False | The scan tool displays True or False. This will set with key off if parasitic current is greater than 1A. |
| Fuel Economy Mode | — | Active | The scan tool displays Active or Inactive. |
| Generator Regulator Setpoint | — | — | The scan tool displays Volts. |
| Load Shed Reason | — | Varies | The scan tool displays Amp Hour Demand Too High, Regulated Voltage Control, Hybrid/EV Battery State of Charge Low, Low Voltage, Service Tool Request, Battery Save Mode, or None. This provides indication of what is causing vehicle loads to be turned off in an attempt to prolong 12V battery life. |
| Load Shed Requested | — | — | — |
| Low-Voltage Battery Previous State of Charge | — | Varies | The scan tool displays percentage (%). |
| Low-Voltage Battery State of Charge | — | Varies | The scan tool displays percentage (%). |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Low-Voltage Battery Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). |
| Requested Idle Boost Level | — | Varies | The scan tool displays Assembly Plant Mode, Low Temperature, Ah, HVAC Request, Low Voltage, Remote Start, Service Tool Request, or None. |
| Regulated Voltage Control Mode | — | Varies | The scan tool displays Remote Start, Fuel Economy Mode, Normal, Charge Recovery Mode, Assembly Plant Mode, or Ignition and Start Switch Start. |
| Stop/Start Mode | — | — | — |

### Body Control Module — Front Exterior Lighting Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Headlamp Leveling Function | — | Inactive | The scan tool displays Active or Inactive. |
| Headlamp Leveling Sensor Learn | — | Learn Not Enabled | The scan tool displays Learn Not Enabled, Learning, Learn Successful, or Learn Failed. This parameter indicates the headlamp learns suspension trim position. |
| Left Headlamp Vertical Motor Command | — | Inactive | This scan tool displays Active or Inactive. |
| Right Headlamp Vertical Motor Command | — | Inactive | This scan tool displays Active or Inactive. |
| Left Auxiliary Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Right Auxiliary Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Left Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Right Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Left Front Auxiliary Park Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Auxiliary Park Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Right Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Front Fog Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Fog Lamp Command | — | Off | The scan tool displays On or Off. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Park Lamps Command | — | Off | The scan tool displays On or Off. |
| Right Park Lamps Command | — | Off | The scan tool displays On or Off. |
| Left Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |
| Surround View Exterior Courtesy Lamps Command | — | Off | The scan tool displays On or Off. |

### Body Control Module — Heated Steering Wheel Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Heated Steering Wheel Indicator | — | Off | The scan tool displays Off, Low, Medium, or High. |
| Heated Steering Wheel Request Source | — | Switch | The scan tool displays Switch or Remote Vehicle Start. |
| Heated Steering Wheel Command | — | Off | The scan tool displays Off, Low, Medium, or High. |
| Heated Steering Wheel Relay | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Service Heated Steering Wheel Indicator | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Load Reduction | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Mode | — | Off | The scan tool displays Off, Remote Vehicle Start, Automatic, or Switch. |
| Heated Steering Wheel Diagnostic Fault Active - Stuck Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel | — | Inactive | The scan tool displays Active or Inactive. |
| Heated Steering Wheel Internal Temperature | — | Off | The scan tool displays Off, Low, Medium, or High. |

### Body Control Module — HVAC Sensor Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| A/C Evaporator Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter refers to the sensor used to determine the temperature of the air conditioning system's evaporator. The temperature is displayed with a low level of detail. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| A/C Evaporator Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter indicates the temperature (degrees of heat) of the air conditioning system's evaporator. |
| Ambient Air Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter indicates the temperature of the air surrounding the vehicle. |
| Humidity Level at the Windshield | — | Varies | The scan tool displays percentage (%). This is the measurement of the amount of moisture near the windshield that is used by the heating, ventilation, air conditioning (HVAC) system to prevent fogging. |
| Left Front HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Windshield, Windshield, Floor and Windshield, or Floor and Vent and Windshield, or Max Defrost. This parameter describes what state the heating, ventilation, air conditioning system is in for the front left area of the vehicle cabin. |
| Left Front Passenger Compartment Air Temperature | — | Varies | The scan tool displays the amount of heat in the air in the left front area of the interior cabin of the vehicle in Celsius (°C) or Fahrenheit (°F). |
| Left Rear HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Roof, Roof, Roof and Floor, or Floor and Vent and Roof. This parameter describes what state the heating, ventilation, air conditioning system is in for the rear left area of the vehicle cabin. |
| Passenger Compartment Air Temperature Sensor Voltage | — | Varies | The scan tool displays the voltage of the passenger compartment air temperature sensor in mV. |
| Passenger Compartment Humidity | — | Varies | The scan tool displays percentage (%). The parameter indicates the amount of water in the air in the passenger compartment. |
| Rear Lower Duct Air Temperature Sensor Voltage | — | Varies | The scan tool displays Volts. This is a temperature sensor used to monitor the air temperature from the rear floor ducts. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Windshield, Windshield, Floor and Windshield, or Floor and Vent and Windshield, or Max Defrost. This parameter describes what state the heating, ventilation, air conditioning system is in for the front right area of the vehicle cabin. |
| Right Front Passenger Compartment Air Temperature | — | Varies | The scan tool displays the amount of heat in the air in the right front area of the interior cabin of the vehicle in Celsius (°C) or Fahrenheit (°F). |
| Right Rear HVAC Mode Status | — | Not Determined | The scan tool displays Not Determined, Off, Auto, Floor, Floor and Vent, Vent, Vent and Roof, Roof, Roof and Floor, or Floor and Vent and Roof. This parameter describes what state the heating, ventilation, air conditioning system is in for the rear right area of the vehicle cabin. |
| Sunload Sensor Voltage | — | Varies | The scan tool displays Volts. This is a sensor that detects how warm the sun is shining. |
| Windshield Temperature | — | Varies | The scan tool displays temperature in Celsius (°C) or Fahrenheit (°F). This parameter detects the temperature of the front window (windshield). |

### Body Control Module — HVAC System Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| A/C Compressor Refrigerant Solenoid Valve Command | — | Varies | The scan tool displays percentage (%). |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| A/C Compressor Displacement | — | Ready | The scan tool displays Ready, Ramp up, Running, or Ramp down. A variable displacement air conditioning compressor has the ability to change the amount of refrigerant that is pumped into the system (output) while it is running by way of a pulse width modulated (PWM) solenoid. A PWM solenoid will vary the compressor output by using a DC supply voltage that is switched on and off at a given frequency for a modulated period of time (duty cycle). The duty cycle is the “on” time of the voltage and is expressed as a percentage of the time period. This parameter describes the condition in which a variable displacement air conditioning compressor is increasing displacement, holding steady, or decreasing displacement. |
| A/C Switch | — | Compressor Off | The scan tool displays Compressor Off, Compressor On, or Compressor In Econ. This parameter is used to indicate the status of the signal being sent to the Engine Control Module to turn the A/C on. |
| Air Quality Sensor | — | Varies | The scan tool displays percentage (%). This is a sensor that measures the amount of contamination, pollution, dirt, odor in the ambient air. |
| Air Quality Recirculation Control | — | Inactive | The scan tool displays Active or Inactive. The recirculation door in an air conditioning system has the ability to either allow fresh air into the vehicle or to pass the existing cabin air back through the air conditioning system. The recirculation door will be closed if the Air Quality Sensor detects oxidizing, reducing, or ammonia gasses and reopens the door when these gasses are no longer detected. |
| Auxiliary Blower Motor Speed Command | — | Varies | This parameter shows the value (counts) being sent to command the rear blower from the Auxiliary Blower switch on the front panel. This describes the rear blower motor for the HVAC system. This is supplemental to the primary blower fan. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Auxiliary Coolant Pump | — | Inactive | The scan tool displays Active or Inactive. The Auxiliary Coolant Pump refers to a second engine cooling pump that may be devoted to a different function other than for purposes of engine cooling. |
| Auxiliary Coolant Pump Dry | — | Inactive | The scan tool displays Active or Inactive. This parameter contains the fault information that is communicated by the Electric Auxiliary Coolant Pump over Local Interconnect Network (LIN) to the engine controller. An electric coolant pump circulates engine coolant. This indicates whether the pump was operated without coolant. |
| Auxiliary Coolant Pump Internal Status | — | Inactive | The scan tool displays Active or Inactive. This parameter contains the fault information that is communicated by the Electric Auxiliary Coolant Pump over Local Interconnect Network (LIN) to the engine controller. An electric coolant pump circulates engine coolant. This indicates whether the pump indicates an internal error. |
| Auxiliary Coolant Pump Motor Stalled | — | Inactive | The scan tool displays Active or Inactive. This parameter contains the fault information that is communicated by the Electric Auxiliary Coolant Pump over Local Interconnect Network (LIN) to the engine controller. An electric coolant pump circulates engine coolant. This indicates whether the pump has stopped running. |
| Auxiliary Heater Enable Signal | — | Inactive | The scan tool displays Active or Inactive. |
| Blower Motor Feedback Signal | — | Varies | The scan tool displays percentage (%). The Blower Motor passes air through the heater core and circulates air throughout the passenger compartment. The Blower Motor is controlled by a module. This parameter indicates the Blower Motor operation Feedback Signal received by the module. |
| Blower Motor Speed | — | Varies | This parameter indicates the commanded HVAC Blower Motor Speed, displayed in percent, that the blower is turning. The blower motor is a motor with a cage attached to force the air through ducts such as heater, ventilation and defrost ducts. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Blower Motor Speed Command | — | Varies | This parameter indicates the commanded HVAC Blower Motor Speed, displayed in percent, that the blower is turning. The blower motor is a motor with a cage attached to force the air through ducts such as heater, ventilation and defrost ducts. |
| Blower Motor Speed Feedback Signal | — | Normal Function | The scan tool displays Out of Range Low, Stall, Partial Stall, Voltage Out of Range, Normal Function, Motor Over Temperature, Not Used, Mechanical Malfunction, or Out of Range High. The Blower Motor passes air through the heater core and circulates air throughout the passenger compartment. The Blower Motor is controlled by a module. This parameter indicates the Blower Motor operation Feedback Signal received by the module. |
| Blower Motor Speed Request | — | — | This parameter shows the current state of the switch that turns on the front blower (device that produces a current of air). |
| Calculated A/C Evaporator Air Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This parameter indicates the calculated temperature (degrees of heat) of the air that is flowing through the evaporator. The temperature is calculated by the HVAC controller using parameters such as outside air temperature, evaporator temperature and compressor status. An evaporator is a device in a process used to turn the liquid form of a chemical substance into its gaseous-form/vapor. |
| Coolant Heater Control Module Inlet Coolant Temperature | — | Varies | The scan tool displays this parameter Identifier as a value between -40°C and 150°C approximately to reflect Inlet Coolant Temperature into Coolant Heater Control Module, reported by Coolant Heater Control Module. |
| Coolant Heater Control Module LIN Bus | — | True | The scan tool displays this parameter identifier as False or True. This parameter identifier is indicative of a Signal State of Coolant Heater Operation Enable from Electronic Climate Control to Coolant Heater Control Module on Local Interconnect Network Bus that allows Coolant Heater to Start Diagnostics whether or not Heating is commanded. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Coolant Heater Control Module Status | — | Normal Function | The scan tool displays Normal Function, Temporarily Limited, Recoverable Malfunction, or Non-Recoverable Malfunction. This parameter is used to determine whether the Coolant Heater Control Module is operating normally (Normal Operation) or if there is a problem with a) the Coolant Heater Control Module (scan tool displays only Limited Operation) or b) there is a blockage or restriction in coolant flow (scan tool switches between Normal Running and Limited Operation). |
| Coolant Heater Control Module Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature inside the coolant heater control module. |
| Coolant Heater Current | — | Varies | The scan tool displays the present electric current flow value of the coolant heater in amps. |
| Desired Engine Coolant Bypass Valve Position | — | Not Requested | The scan tool displays Not Requested, Bypass, or Connected. This parameter displays the requested target position of the Coolant Bypass Valve. |
| Engine Coolant Heater Command | — | Varies | The scan tool displays in kW. This is the serial data command to control the device to heat up the coolant in case the engine does not produce enough heat. |
| Front Blower Motor State | — | Varies | The scan tool displays Not Determined, Off, Auto, Manual, or Manual Max. This parameter indicates the current mode or condition of the front blower motor. |
| Heater Pump Speed | — | Varies | The scan tool displays the heater pump speed in RPM. This is a coolant pump which circulates heat through the heater core to maintain cabin temperature. While the vehicle is in Autostop, the pump can interrupt the Autosop timing, if the cabin temperature is too low. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| HVAC Afterblow | — | Inactive | The scan tool displays Active or Inactive. This parameter displays whether the afterblow function is in a functioning state or not. The afterblow function temporarily turns on the fan after the vehicle is off to dry the evaporator core which will reduce microbial growth and odors. An evaporator is a device in a process used to turn the liquid form of a chemical substance into its gaseous-form/vapor. |
| HVAC Afterblow - Blower Motor Speed | — | Varies | This parameter displays how fast the fan is running while in an afterblow condition. The fan speed is displayed as steps from 0 to 12 with 0 being off and 12 being the fastest speed. The afterblow function temporarily turns on the fan after the vehicle is off to dry the evaporator core which will reduce microbial growth and odors. An evaporator is a device in a process used to turn the liquid form of a chemical substance into its gaseous-form/vapor. |
| HVAC Afterblow Configuration | — | — | — |
| HVAC System Heater Core Coolant Flow Rate Feedback | — | Varies | The scan tool displays the coolant flowing rate in L/min. The HVAC System Heater Core contains coolant that flows though the core to heat the vehicle passenger compartment. The system is controlled by a module. This parameter indicates the coolant flow rate through the heater core requested by the module. |
| HVAC System Heater Core Coolant Flow Rate Request | — | Varies | The scan tool displays the coolant flowing rate in L/s. The HVAC System Heater Core contains coolant that flows though the core to heat the vehicle passenger compartment. The system is controlled by a module. This parameter indicates the coolant flow rate through the heater core requested by the module. |
| Rear Defogger Activated by Automatic | — | Yes | The Auto Rear Defogger (heating wires in the glass) can automatically activate if the ambient temperature is below 5°C. This parameter has the states Yes/No. |
| Rear Defogger Command | — | — | — |
| Rear Defogger Deactivation Reason | — | — | — |
| Rear Defogger Indicator | — | — | — |
| Rear Defogger Mode | — | — | — |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Rear Defogger On Time Remaining | — | — | — |
| Rear Defogger Relay Command | — | — | — |
| Rear Defogger Status | — | — | — |
| Rear Defogger Switch | — | — | — |
| Sun Azimuth | — | — | — |
| Sun Elevation | — | — | — |

### Body Control Module — HVAC Door Position Data 1 — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Air Recirculation Door Actuator Command | — | Varies | This is the serial data command to move the flap of the Recirculation Door, in counts or pulses, for a HVAC system door. Recirculation is using inside air for the HVAC system, instead of outside fresh air. |
| Left Temperature Door Position Command | — | Varies | The scan tool displays percentage (%). This is the serial data command to control the actual position (angle) of the flap that controls the air flow (and therefore the air temperature) through the left heater core. |
| Low Speed Pollution Taking Recirc Action | — | — | — |

### Body Control Module — HVAC Door Position Data 2 — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Right Temperature Door Position Command | — | Varies | The scan tool displays percentage (%). This is the serial data command to move the position (angle) of the flap that controls the air flow (and therefore the air temperature) through the right heater core. |

### Body Control Module — HVAC Faceplate Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Air Recirculation Door Position | — | Varies | The scan tool displays the command status of the HVAC control module recirculation switch: Not Determined, Auto, Fresh Air, or Recirc. The mode of recirculation means the air inside the vehicle is recirculated rather than drawn from outside. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Air Quality Sensor Switch | — | Off | The scan tool displays Off, Low Sensitivity, or Hi Sensitivity. This parameter describes the switch state of the Air Quality Sensor on the HVAC Faceplate. |
| Auxiliary Blower Motor Switch | — | Off | The scan tool displays Not Determined, Off, Auto, Manual, or Manual Max. This parameter reflects the current state of the switch in the rear of the vehicle that controls the rear blower. This describes the rear blower motor for the HVAC system. This is supplemental to the primary blower fan. |
| Desired Left Temperature | — | Varies | The scan tool displays Temp Set Off, Temp Set Normal, Temp Set Low, or Temp Set Hi. This parameter displays the setting of left temperature. |
| Desired Right Temperature | — | Varies | The scan tool displays Temp Set Off, Temp Set Normal, Temp Set Low, or Temp Set Hi. This parameter displays the setting of right temperature. |

### Body Control Module — Hybrid/EV Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Coolant Heater Control Module Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature inside the coolant heater control module. |

### Body Control Module — Indicator Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Child Security Lock Indicator command | — | Off | The scan tool displays On or Off. |
| Lane Departure Warning Indicator Status | — | Off | The scan tool displays On or Off. |
| Security Indicator Command | — | Off | The scan tool displays On or Off. |

### Body Control Module — Interior Lighting Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Cargo Lamp Command | — | Inactive | The scan tool displays Active or Inactive. |
| Cargo Lamp Indicator | — | Inactive | The scan tool displays Active or Inactive. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cargo Mirror Lamp | — | Inactive | The scan tool displays Active or Inactive. |
| Dome Lamp Command | — | Off | The scan tool displays On or Off. |
| Door Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Front Courtesy Lamps | — | Inactive | The scan tool displays Active or Inactive. |
| Front Footwell Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Instrument Panel Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Interior Courtesy Lamps Command | — | Inactive | The scan tool displays Active or Inactive. |
| Left Turn Signal Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Turn Signal Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Overhead Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Park Lamps Indicator | — | Inactive | The scan tool displays Active or Inactive. |
| Rear Footwell Ambient Lighting Command | — | Off | The scan tool displays On or Off. |
| Welcome Lighting | — | Off | The scan tool displays On or Off. |

## Body Control Module — Keyless Entry Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Current Number of Key Fobs Programmed | — | Varies | This parameter indicates how many transmitters have been learned to the Body Control Module currently. |
| Key Fob Identifier | — | Varies | This parameter refers to the part number of key fob or transmitter being placed in the backup pocket location that uses the radio transmitter inside a vehicle key used to control the central door locking via button presses. |
| Key Fob 1 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 1. |
| Key Fob 2 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 2. |
| Key Fob 3 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 3. |
| Key Fob 4 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 4. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Key Fob 5 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 5. |
| Key Fob 6 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 6. |
| Key Fob 7 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 7. |
| Key Fob 8 Malfunction | — | No | The scan tool displays Yes or No. This parameter indicates a fault in transmitter # 8. |
| Number of Key Fobs Learned | — | Varies | This parameter indicates how many transmitters have been programmed to the Keyless Entry Control Module. |
| Total Key Fobs Erased | — | Off | This parameter indicates the number of transmitters erased from the Body Control Module memory. |
| Passive Entry Disabled Due to Lack of Motion Counter | — | Varies | This parameter indicates the count value of the passive entry inhibited due to no key fob or transmitter movement. |
| Passive Start Disabled Due to Excessive Motion Counter | — | Varies | This parameter indicates the count value of the passive start inhibited due to large key fob or transmitter movement. |
| Passive Start Diabled Due to Lack of Motion Counter | — | Varies | This parameter indicates the count value of the passive start inhibited due to no key fob or transmitter movement. |

### Body Control Module — Outside Rear View Mirror Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Mirror Folding | — | Inactive | The scan tool displays Inactive, Fold, or Unfold. |
| Mirror Select Switch | — | Not Active | The scan tool displays Active or Inactive. |

### Body Control Module — Power Mode Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Accessory/Retained Accessory Power Relay Command | — | Inactive | The scan tool displays Active or Inactive. |
| Backup Run/Crank Relay Command | — | Inactive | The scan tool displays Active or Inactive. |
| Backup System Power Mode | — | Off | The scan tool displays Off, Accessory, Run, Start, or Propulsion Active. This parameter indicates Power Mode determined by Serial Data Gateway Module. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Battery Saver Mode | — | Off | The scan tool displays Off, Assembly Plant Mode, Transport Mode, or Storage Mode. |
| Ignition Switch Status | — | Varies | The scan tool displays Short to Ground, Active, Inactive, or Open/Short to Battery. |
| Power Mode | — | Varies | The scan tool displays Off, Accessory, Run, Start, or Propulsion Active. This parameter indicates the current power mode of the module. |
| Power Mode Timeout | — | Disable | The scan tool displays Enable or Disable. This parameter disables or enables the power mode timeout function (not whether timer is active or inactive) and indicates whether or not the power mode timeout function has been disabled allowing to stay in power mode indefinitely (not whether timer is active or inactive). |
| Run/Crank Relay Command | — | Inactive | The scan tool displays Active or Inactive. |
| Run Relay Command | — | Inactive | The scan tool displays Active or Inactive. |

### Body Control Module — Rear Exterior Lighting Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Backup Lamps | — | Off | The scan tool displays On or Off. |
| Center High Mounted Stop Lamp | — | Off | The scan tool displays On or Off. |
| Hands-Free Liftgate Sensor Lamp | — | Off | The scan tool displays On or Off. |
| Left Stop Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Stop Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Tail Lamp | — | Off | The scan tool displays On or Off. |
| Right Tail Lamp | — | Off | The scan tool displays On or Off. |
| Left Auxiliary Tail Lamp | — | Off | The scan tool displays On or Off. |
| Right Auxiliary Tail Lamp | — | Off | The scan tool displays On or Off. |
| Left Rear Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Rear Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Trailer Turn Signal/Stop Lamp Command | — | Off | The scan tool displays On or Off. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Trailer Turn Signal/Stop Lamp Command | — | Off | The scan tool displays On or Off. |
| License Plate Lamps Command | — | Off | The scan tool displays On or Off. |
| Rear Fog Lamp Command | — | Off | The scan tool displays On or Off. |
| Tail Lamps | — | Off | The scan tool displays On or Off. |
| Trailer Backup Lamps Command | — | Off | The scan tool displays On or Off. |

### Body Control Module — Rear HVAC Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Lower Rear Duct Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature reading in the HVAC air routing system. |
| Upper Rear Duct Temperature | — | Varies | The scan tool displays temperature in Celsius (°C). This is the temperature reading in the HVAC air routing system. |

### Body Control Module — Remote Vehicle Start Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Engine Stalled During Remote Vehicle Start Mode | — | Varies | This parameter indicates the number of times the engine was stalled or unexpectedly stops running. This is part of the Remote Vehicle Start subsystem that disables remote start. |
| Park Lamps Request | — | No | The scan tool displays Yes or No. This parameter refers to the state (on or off) of the electronic request to illuminate the lamps located on the exterior four corners of the vehicle. |
| Remote Vehicle Start Disabled By Driver | — | Varies | This parameter determines if remote vehicle start was turned off by the driver. Remote start is activated by pressing a button on the key fob which allows the engine to start when the key fob is several yards from the vehicle. |
| Remote Vehicle Start Request | — | No | The scan tool displays Yes or No. This parameter displays the On / Off position or status for the remote start functionality. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Remote Vehicle Start Source | — | None | The scan tool displays None, Key Fob 1, Key Fob 2, Key Fob 3, Enhanced Services, or Virtual Key. This parameter indicates which key fob was used for Remote Vehicle Start such as husband, wife, child, Onstar, bluetooth, etc... |
| Remote Vehicle Start Status | — | Inactive | The scan tool displays Yes or No. This parameter indicates the state of remote start which is activated by pressing a button on the key fob which allows the engine to start when the key fob is several yards from the vehicle. States are active or inactive. |
| Remote Vehicle Start Timer | — | Varies | This parameter indicates the amount of time the engine will run after a remote start request. One additional request is allowed which will reset the timer once. The scan tool displays time remaining in seconds. |
| Run/Crank Relay Command | — | None | The scan tool displays None, Active, or Deactive. This parameter indicates the state (off or on) of command for an ignition relay control circuit. "Run" means engine is started and keeps going, and "crank" engages the starter when the key in the ignition switch turns making engine turn over. |
| Turn Signal Lamps Request | — | No | The scan tool displays Yes or No. This parameter indicates the request for the turn signal lamps to flash during a remote start request and remain on for visual confirmation the remote start is functioning. |

### Body Control Module — Remote Vehicle Start Disable History Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Remote Vehicle Start Disable History 1 | — | Varies | The scan tool displays Valet Mode, Run Abort, Ignition Switch Status, Hood Open Switch Signal Invalid, Hood Open Switch, Hazard Lamps Switch, Key Fob in Vehicle, Crank Abort, Brake Transmission Shift Interlock Solenoid Actuator, Content Theft Deterrent Mode, Power Mode Incorrect, Battery Voltage, Remote Vehicle Start Crank Time, or Folding Top Position. This parameter indicates one of the last eight reasons the powertrain has disabled the remote vehicle start. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Remote Vehicle Start Disable History 2 | — | Varies | The scan tool displays Valet Mode, Run Abort, Ignition Switch Status, Hood Open Switch Signal Invalid, Hood Open Switch, Hazard Lamps Switch, Key Fob in Vehicle, Crank Abort, Brake Transmission Shift Interlock Solenoid Actuator, Content Theft Deterrent Mode, Power Mode Incorrect, Battery Voltage, Remote Vehicle Start Crank Time, or Folding Top Position. This parameter indicates one of the last eight reasons the powertrain has disabled the remote vehicle start. |
| Remote Vehicle Start Disable History 3 | — | Varies | The scan tool displays Valet Mode, Run Abort, Ignition Switch Status, Hood Open Switch Signal Invalid, Hood Open Switch, Hazard Lamps Switch, Key Fob in Vehicle, Crank Abort, Brake Transmission Shift Interlock Solenoid Actuator, Content Theft Deterrent Mode, Power Mode Incorrect, Battery Voltage, Remote Vehicle Start Crank Time, or Folding Top Position. This parameter indicates one of the last eight reasons the powertrain has disabled the remote vehicle start. |

## Body Control Module — Seat Heating/Venting/Cooling Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Seat Heating/Venting/Cooling Load Shed | — | Inactive | The scan tool displays Active or Inactive. When this parameter is active, it indicates the Heating/Venting/Cooling system is shutdown to reduce strain on the vehicle electrical system which is experiencing too high of a current draw. |
| Left Front Seat Heating/Venting/Cooling Operating Conditions | — | Varies | The scan tool displays Remote Vehicle Start, Automatic, Manual, or Autostop Request. The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Front Seat Heating/ Venting/Cooling Requested Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the Body Control Module tracking various inputs. |
| Left Front Seat Heating/ Venting/Cooling Requested Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the Body Control Module tracking various inputs. |
| Left Front Seat Heating/ Venting/Cooling Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the Body Control Module software based on a number of factors. |
| Left Front Seat Heating/ Venting/Cooling Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the Body Control Module software based on a number of factors. |
| Left Front Seat Blower Command | — | Inactive | The scan tool displays Active or Inactive. This parameter can be used for setting various blower speeds but service tool will only turn on high to verify module outputs and fan operation. |
| Right Front Seat Heating/ Venting/Cooling Operating Conditions | — | Varies | The scan tool displays Remote Vehicle Start, Automatic, Manual, or Autostop Request. The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |
| Right Front Seat Heating/ Venting/Cooling Requested Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the Body Control Module tracking various inputs. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front Seat Heating/ Venting/Cooling Requested Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being requested as determined by the Body Control Module tracking various inputs. |
| Right Front Seat Heating/ Venting/Cooling Mode | — | Varies | The scan tool displays Off, Seat Back Heating, Seat Back and Cushion Heating, or Seat Venting/Cooling. This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the Body Control Module software based on a number of factors. |
| Right Front Seat Heating/ Venting/Cooling Level | — | Varies | The scan tool displays Off, High, Medium, or Low. This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the Body Control Module software based on a number of factors. |
| Right Front Seat Blower Command | — | Inactive | The scan tool displays Active or Inactive. This parameter can be used for setting various blower speeds but service tool will only turn on high to verify module outputs and fan operation. |

## Body Control Module — Sunroof Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Sunroof Closed | — | Yes | The scan tool displays Yes or No. This parameter indicates that sunroof is not open. The sunroof is a fixed or operable opening in an automobile roof which allows light and/or fresh air to enter the passenger compartment. |
| Sunroof Open | — | Yes | The scan tool displays Yes or No. This parameter indicates the sunroof state that it is not closed. The sunroof is a fixed or operable opening in an automobile roof which allows light and/or fresh air to enter the passenger compartment. |
| Sunroof Switch | — | Varies | The scan tool displays Inactive, Open, Close, or Stop. This is the switch to move the sunroof. |
| Sunroof Switch Fault | — | Varies | The scan tool displays Short to Ground, Short to Battery, Stuck, or None. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Sunroof Not Learned | — | No | The scan tool displays Yes or No. This parameter indicates that the control module has not learned the sunroof (the glass) home position. |
| Sunroof Motor Overtemperature | — | No | The scan tool displays Yes or No. This parameter indicates that the motor that operates the sunroof motor is too hot to operate properly. |
| Sunroof Obstruction | — | No | The scan tool displays Yes or No. This parameter indicates that an obstruction is detected which prevents the movement of the sunroof. |
| Sunroof System Voltage Low | — | No | The scan tool displays Yes or No. This parameter indicates the sunroof performance is degraded due to voltage being below a certain threshold. |
| Sunroof Vent | — | No | The scan tool displays Yes or No. This parameter indicates the sunroof is partially open. |
| Sunshade Closed | — | Yes | The scan tool displays Yes or No. |
| Sunshade Open | — | Yes | The scan tool displays Yes or No. |
| Sunshade Switch | — | Varies | The scan tool displays Inactive, Open, Close, or Stop. This is the switch to move the sunshade (the non-transparent cover below the sunroof). |
| Sunshade Switch Fault | — | Varies | The scan tool displays Short to Ground, Short to Battery, Stuck, or None. |
| Sunshade Not Learned | — | No | The scan tool displays Yes or No. This parameter indicates that the sunshade position is not learned. |
| Sunshade Motor Overtemperature | — | Inactive | The scan tool displays Active or Inactive. This parameter indicates that the motor that operates the sunshade is too hot to operate properly. |
| Sunshade Obstruction | — | No | The scan tool displays Yes or No. This parameter indicates that an obstruction is detected which prevents the movement of the sunshade. |
| Sunshade System Voltage Low | — | No | The scan tool displays Yes or No. This parameter indicates that the sunshade performance is degraded due to voltage being below a certain threshold. |

## Body Control Module — Tire Pressure Monitoring Sensor Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Front Tire Pressure Sensor Identification | — | Varies | This parameter refers to the part number of the electronic device that measures the force of air on the interior surface of the left, front tire. |
| Left Front Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the left front tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Left Front Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |
| Left Front Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Left Front Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Left Front Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |
| Left Rear Tire Pressure Sensor Identification | — | Varies | This parameter refers to the part number of the electronic device that measures the force of air on the interior surface of the left, rear tire. |
| Left Rear Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the left rear tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Left Rear Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Rear Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Left Rear Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Left Rear Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |
| Right Front Tire Pressure Sensor Identification | — | Varies | This parameter will display the six digit identification number of the sensor indicated which is an electronic device that measures the force of air on the interior surface of the tire. |
| Right Front Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the right front tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Right Front Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |
| Right Front Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Right Front Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Right Front Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |
| Right Rear Tire Pressure Sensor Identification | — | Varies | This parameter will display the six digit identification number of the sensor indicated which is an electronic device that measures the force of air on the interior surface of the tire. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Rear Tire Pressure Sensor Battery Status | — | Normal | The scan tool displays Normal or Low Pressure. This parameter displays the state of the power supply (battery) for the right rear tire pressure sensor which is an electronic device that measures the force of air on the interior surface of the tire. |
| Right Rear Tire Pressure Sensor Status | — | Varies | This parameter will display different types of sensor faults. The tire pressure sensors are mounted inside a tire assembly on valve stems or wheel rims. |
| Right Rear Tire Pressure Sensor Signal Strength | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the signal strength of the sensor. |
| Right Rear Tire Pressure Signal Frame Count | — | Varies | This is the number of data frames the tire pressure sensor is transmitting while driving. |
| Right Rear Tire Pressure Signal Packet Count | — | Varies | This is the number of packet counts the tire pressure sensor is transmitting while driving. |

### Body Control Module — Tire Pressure Monitoring System Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Front Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the front of the vehicle on the left side. |
| Left Front Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the left front tire. |
| Left Front Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter indicates the state of the tire based on tire pressure. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Front Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Left Rear Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the rear of the vehicle on the left side. |
| Left Rear Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the left rear tire. |
| Left Rear Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter identifies status of left rear tire pressure. |
| Left Rear Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Right Front Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the front of the vehicle on the right side. |
| Right Front Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the right front tire. |
| Right Front Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter indicates the state of the tire based on tire pressure. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Right Rear Tire Pressure | — | Varies | Tire pressure is a measure of the amount of air in a vehicle's tires, in pounds per square inch (PSI). This parameter is the amount of pressure present in the rear of the vehicle on the right side. |
| Right Rear Tire Pressure Sensor Mode | — | Varies | The scan tool displays Learn Mode - Remotely Triggered, Undefined, Re-Measure, Drive Mode, Power Down, Wake-Up, or Learn Mode - Pressure Triggered. This parameter refers to the operational level of the electronic device that measures the force of air on the interior surface of the right rear tire. |
| Right Rear Tire Pressure Status | — | Varies | The scan tool displays Unknown, Nominal, Very Low Pressure, Low, Weak Signal, or High. This parameter indicates the state of the tire based on tire pressure. |
| Right Rear Tire Temperature | — | Varies | The tire pressure monitoring system detects a pressure loss at the tires. Each wheel is equipped with a pressure sensor to measure the pressure and temperature. This parameter displays the temperature of the tire. |
| Last Tire Fill Alert Notification | — | Varies | The scan tool displays Left Rear Inner, Left Rear Outer, Right Rear Outer, Left Front, Right Rear Inner, Spare, Unknown, or Right Front. Tire Fill Alert is a software feature that indicates when a predetermined pressure level is reached performed on the last tire. |
| Tire Fill Alert System State - Current | — | Varies | The scan tool displays Non Monitor, Monitoring, Active, or Achieved. Tire Fill Alert is software feature in the Tire Pressure Module system. Basically, the Tire Pressure Module system enables the High Pressure Warnings when the air pressure level goes higher than target pressure level. This parameter indicates the immediate status of the system in the present power cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Tire Fill Alert System State - Previous | — | Varies | The scan tool displays Non Monitor, Monitoring, Active, or Achieved. Tire Fill Alert is software feature in the Tire Pressure Module System. Basically, the Tire Pressure Module system enables the High Pressure Warnings when the air pressure level goes higher than target pressure level. This parameter indicates the status in the former power cycle. |
| Self Auto Learn Status - Left Front Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |
| Self Auto Learn Status - Left Rear Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |
| Self Auto Learn Status - Right Front Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |
| Self Auto Learn Status - Right Rear Sensor | — | Inactive | The scan tool displays Active or Inactive. For vehicles with Self Auto Learn capable sensors, this parameter is used to define transmission during rolling Self Auto Learn state. A value of 1 means Self Auto Learn rolling state is Active and a value of 0 sets for all other non Self Auto Learn transmissions. |

## Body Control Module — Windows Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| All Windows Up/Down | — | Close | The scan tool displays Open or Close. |
| Driver Window Learned | — | Yes | The scan tool displays Yes or No. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Driver Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Left Front Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Left Front Window Lockout Status | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Window Motor Current | — | Varies | The scan tool displays left front window motor current in amperes (A). |
| Left Front Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Left Rear Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |
| Left Rear Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Left Rear Window Learned | — | Yes | The scan tool displays Yes or No. |
| Left Rear Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Left Rear Window Lockout Status | — | Inactive | The scan tool displays Active or Not Active. |
| Left Rear Window Motor Current | — | Varies | The scan tool displays left rear window motor current in amperes (A). |
| Left Rear Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Left Rear Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Passenger Window Learned | — | Yes | The scan tool displays Yes or No. |
| Passenger Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Right Front Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Right Front Window Lockout Status | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Window Motor Current | — | Varies | The scan tool displays right front window motor current in amperes (A). |
| Right Front Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Right Rear Window Express Up | — | Inactive | The scan tool displays Active or Inactive. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Rear Window Express Down | — | Inactive | The scan tool displays Active or Inactive. |
| Right Rear Window Learned | — | Yes | The scan tool displays Yes or No. |
| Right Rear Window Learned Indicator | — | Not Active | The scan tool displays Active or Not Active. |
| Right Rear Window Lockout Status | — | Inactive | The scan tool displays Active or Inactive. |
| Right Rear Window Motor Current | — | Varies | The scan tool displays right rear window motor current in amperes (A). |
| Right Rear Window Motor Relay Fault Status | — | OK | This scan tool displays OK or Malfunction. |
| Right Rear Window Switch | — | Inactive | The scan tool displays Inactive, Up, Express Up, Down, Express Down, or Stop. |
| Window Lockout Indicator | — | Inactive | The scan tool displays Active or Inactive. |

### Body Control Module — Wiper/Washer Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Windshield Washer Switch | — | Off | This parameter is used to display the state of the windshield washer switch. The states are On or Off. This is the electrical connection that controls the input to the motor that causes washer fluid to be dispensed on the front windshield. |
| Windshield Wiper Switch | — | Off | The scan tool displays Off, Sensitivity 1, Sensitivity 2, Sensitivity 3, Sensitivity 4, Sensitivity 5, Low, or High. This is the electrical connection that controls the input to the motor that causes movement of the wiper arm to clear the front windshield. |
| Windshield Wiper Mode | — | Varies | The scan tool displays Low, High, Delay 1, Delay 2, Delay 3, Delay 4, Delay 5, Suspended Due to Engine Crank, Parked, Service Park, Depressed Park, or Winter Park. This parameter displays the windshield wiper mode status. |
| Windshield Wiper Auto Mode Switch | — | — | — |
| Windshield Wiper Motor Protection Mode | — | — | — |

## Body Control Module — Tire Pressure Monitoring System Data – Front — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Selected Front Tire Type | — | Standard Load | The scan tool displays No Tire Type, Standard Load, Extra Load, Load Range C, Load Range D, or Load Range E. This parameter displays the front tire type. |
| Front Tire Pressure on Placard | — | Varies | This parameter reads the tire pressures selected for the front of the vehicle during programming / vehicle setup. Placard is the label printed on the driver side door. The recommended tire inflation pressures are listed on that label. The purpose of this parameter is to monitor for vehicles which have for some reason cleared the placard values to zero. |
| Front Tire Pressure on Placard (Eco) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Front Tire Pressure on Placard (Comfort) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Front Tire Pressure on Placard (Fully Loaded) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Tire Pressure Monitoring System Regulation Type | — | Varies | The scan tool displays FMVSS, China, ECER64, or None. The Tire Pressure Monitoring System can be built to follow different legal standards. This parameter shows the name of the regulation (law giving entity), like Federal Motor Vehicle Safety Standards or Economic Comission for Europe. |

## Body Control Module — Tire Pressure Monitoring System Data – Rear — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Selected Rear Tire Type | — | Standard Load | The scan tool displays No Tire Type, Standard Load, Extra Load, Load Range C, Load Range D, or Load Range E. This parameter is used to display the type of tire selected (Load Range) for rear of the vehicle. The load range of the tire is generally how much weight or load the tire is capable performing. |
| Rear Tire Pressure on Placard | — | Varies | This parameter reads the tire pressures selected for the rear of the vehicle during programming / vehicle setup. Placard is the label printed on the driver side door. The recommended tire inflation pressures are listed on that label. The purpose of this parameter is to monitor for vehicles which have for some reason cleared the placard values to zero. |
| Rear Tire Pressure on Placard (Eco) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Rear Tire Pressure on Placard (Comfort) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Rear Tire Pressure on Placard (Fully Loaded) | — | Varies | This parameter shows the tire pressure printed on the label (placard) in the driver side door. There are 3 pressures given on the label for Comfort, Eco, Fully Loaded. |
| Tire Pressure Monitoring System Regulation Type | — | Varies | The scan tool displays FMVSS, China, ECER64, or None. The Tire Pressure Monitoring System can be built to follow different legal standards. This parameter shows the name of the regulation (law giving entity), like Federal Motor Vehicle Safety Standards or Economic Comission for Europe. |

## Body Control Module — Vehicle Access Data — Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Child Security Lock - Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Child Security Lock - Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Driver Door Open Switch | — | Inactive | This scan tool displays Active or Inactive. |
| Fuel Fill Door Lock | — | Inactive | The scan tool displays Inactive or Lock. |
| Fuel Fill Door Unlock | — | Inactive | The scan tool displays Inactive or Unlock. |
| Glove Box Unlatch Switch | — | Locked | The scan tool displays Locked or Unlocked. |
| Left Front Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Left Front Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Left Front Door Lock Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Left Rear Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Left Rear Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Left Rear Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Left Rear Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Passenger Door Open Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Front Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Right Front Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Right Front Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Right Rear Door Ajar Switch | — | Inactive | The scan tool displays Active or Inactive. |
| Right Rear Door Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Right Rear Door Lock Indicator Command | — | Off | The scan tool displays On or Off. |
| Rear Door Unlock Indicator Command | — | Off | The scan tool displays On or Off. |
| Right Rear Door Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |
| Rear Closure Release | — | Inactive | The scan tool displays Inactive or Unlock. |
| Rear Closure Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Rear Closure Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Theft Deterrent Lock Command | — | Inactive | The scan tool displays Inactive or Lock. |
| Theft Deterrent Unlock Command | — | Inactive | The scan tool displays Inactive or Unlock. |

## Body Control Module — Content Theft Deterrent Alarm Trigger — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Horn Relay Command | This output control refers to a request to initiate the sound for a vehicle's loud warning signal. This output control is used to command the horn relay on and off. |

## Body Control Module — Exterior Lighting — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Center High Mounted Stop Lamp | This output control is used to activate the center high mounted stop lamp when selecting On. The center high mounted stop lamp should illuminate until commanded Off. |
| Left Stop Lamp | This output control is used to activate the left stop lamp when selecting On. The left stop lamp should illuminate until commanded Off. |
| Right Stop Lamp | This output control is used to activate the right stop lamp when selecting On. The right stop lamp should illuminate until commanded Off. |
| License Plate Lamps | This output control is used to activate the license plate lamps when selecting On. The license plate lamps should illuminate until commanded Off. |
| Backup Lamps | This output control is used to activate the backup lamps when selecting On. The backup lamps should illuminate until commanded Off. |
| Left Park Lamps | This output control is used to activate the left park lamps when selecting On. The left park lamps should illuminate until commanded Off. |
| Right Park Lamps | This output control is used to activate the right park lamps when selecting On. The right park lamps should illuminate until commanded Off. |
| Left Daytime Running Lamps | This output control is used to activate the left daytime running lamps when selecting On. The left daytime running lamps should illuminate until commanded Off. |
| Right Daytime Running Lamps | This output control is used to activate the right daytime running lamps when selecting On. The right daytime running lamps should illuminate until commanded Off. |
| Left Auxiliary Daytime Running Lamps | This output control is used to activate the left auxiliary daytime running lamps when selecting On. The left auxiliary daytime running lamps should illuminate until commanded Off. |
| Right Auxiliary Daytime Running Lamps | This output control is used to activate the right auxiliary daytime running lamps when selecting On. The right auxiliary daytime running lamps should illuminate until commanded Off. |
| Left Front Auxiliary Park Lamp Command | This output control is used to activate the left front auxiliary park lamp when selecting On. The left front auxiliary park lamp should illuminate until commanded Off. |
| Right Front Auxiliary Park Lamp Command | This output control is used to activate the right front auxiliary park lamp when selecting On. The right front auxiliary park lamp should illuminate until commanded Off. |
| Left Front Turn Signal Lamp Command | This output control is used to activate the left front turn signal lamp when selecting On. The left front turn signal lamp should illuminate until commanded Off. |
| Right Front Turn Signal Lamp Command | This output control is used to activate the right front turn signal lamp when selecting On. The right front turn signal lamp should illuminate until commanded Off. |
| Left Turn Signal Repeater Lamp Command | This output control is used to activate the left turn signal repeater lamp when selecting On. The left turn signal repeater lamp should illuminate until commanded Off. |
| Right Turn Signal Repeater Lamp Command | This output control is used to activate the right turn signal repeater lamp when selecting On. The right turn signal repeater lamp should illuminate until commanded Off. |
| Rear Fog Lamp(s) | This output control is used to activate the rear fog lamp(s) when selecting On. The rear fog lamp(s) should illuminate until commanded Off. |

## Body Control Module — HVAC Controls — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Blower Motor | This output control commands the HVAC blower motor speed, displayed in percent. The blower should be turning. The blower motor is a motor with a cage attached to force the air through ducts such as heater, ventilation and defrost ducts. |

## Body Control Module — Interior Lighting — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Child Security Lock Indicator | This output control is used to activate the child security lock indicator when selecting On. The child security lock indicator should illuminate until commanded Off. |
| Dome/Reading Lamps Front Overhead Console | This output control is used to activate the dome/reading lamps when selecting On. The dome/reading lamps should illuminate until commanded Off. |
| Lane Departure Warning Indicator | This output control is used to activate the lane departure warning indicator when selecting On. The lane departure warning indicator should illuminate until commanded Off. |
| Security Indicator | This output control is used to activate the security indicator when selecting On. The security indicator should illuminate until commanded Off. |

## Body Control Module — Power Mode — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Run/Crank Relay Command | This output control is used to command run/crank relay active or inactive. |
| Accessory/Retained Accessory Power Relay Command | This output control is used to command accessory/retained accessory power relay active or inactive. |
| Run Relay Command | This output control is used to command run relay active or inactive. |
| Power Mode Timeout | This output control is used to disable or enable the power mode timeout function (not whether timer is active or inactive). |
| Battery Saver Mode | This output control is used to enable or disable the transport mode state. |

## Body Control Module — Seat Heating/Venting/Cooling — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Left Front Seat Heating | This output control is used to turn on/off all outputs for heating elements for the left front seat. |
| Right Front Seat Heating | This output control is used to turn on/off all outputs for heating elements for the right front seat. |
| Driver Seat Blower | This output control can be used for setting various blower speeds, but service tool will only turn on high to verify module outputs and fan operation. |
| Passenger Seat Blower | This output control can be used for setting various blower speeds, but service tool will only turn on high to verify module outputs and fan operation. |

## Body Control Module — Configuration/Reset Functions — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| **Brake Pedal Position Sensor Learn** | |
| Brake Pedal Position Sensor Learn | This output control is used to activate the brake pedal position sensor learn when selecting Learn. The brake pedal position sensor learn procedure should start. |
| **HVAC Actuators Learn** | |
| HVAC Actuators Learn | This output control is used to activate the HVAC actuators learn when selecting Learn. The HVAC actuators learn procedure should start. |

## K19 Suspension Control Module: Scan Tool Information

The suspension control module scan tool data parameters list contains all suspension control related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

### Suspension Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Battery Voltage | — | 11–14 V | The scan tool displays V. This is the current battery voltage. |
| Left Front Damper Actuator Command | — | varies | The scan tool displays mA. This is the current applied to the left front shock absorber actuator. |
| Left Front Suspension Position Sensor | — | .25–.4.75 V | The scan tool displays V. This is the signal from the left front suspension position sensor. |
| Right Front Damper Actuator Command | — | varies | The scan tool displays mA. This is the current applied to the right front shock absorber actuator. |
| Right Front Suspension Position Sensor | — | .25–.4.75 V | The scan tool displays V. This is the signal from the Right front suspension position sensor. |
| Left Rear Damper Actuator Command | — | varies | The scan tool displays mA. This is the current from the left rear shock absorber actuator. |
| Left Rear Suspension Position Sensor | — | .25–.4.75 V | The scan tool displays V. This is the signal from the left rear suspension position sensor. |
| Right Rear Damper Actuator Command | — | varies | The scan tool displays mA. This is the current from the right rear shock absorber actuator. |
| Right Rear Suspension Position Sensor | — | .25–.4.75 V | The scan tool displays V. This is the signal from the right rear suspension position sensor. |
| Suspension System Mode | — | varies | The scan tool displays Comfort, Sport, Normal, or Hard depending on the selected mode. |
| Suspension Position Sensor 5 V Reference | V | 4.8–5.2 V | The scan tool displays V. This is the suspension position sensor supply voltage. |

### Suspension Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Left Front Damper Actuator | Commands the current applied to the left front shock absorber actuator Increase or Decrease. |
| Left Rear Damper Actuator | Commands the current applied to the left rear shock absorber actuator Increase or Decrease. |
| Right Front Damper Actuator | Commands the current applied to the right front shock absorber actuator Increase or Decrease. |
| Right Rear Damper Actuator | Commands the current applied to the right rear shock absorber actuator Increase or Decrease. |

## K20 Engine Control Module: Scan Tool Information

### Engine Control Module Scan Tool Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| This is a comprehensive list. Not all parameters listed are available for all applications.<br>**Base Operating Conditions:** Engine Idling/Radiator Hose Hot/Park or Neutral/Closed Loop/Accessories OFF | | | |
| 4WD Low Signal | — | Enabled/Disabled/Invalid | This parameter displays the status of the four wheel drive system. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| 5-V Reference 1 | — | 5 Volts | This parameter displays the voltage sensed on the 5-volt reference 1 circuit at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage. |
| 5-V Reference 1–4 | — | 5 Volts | This parameter displays the voltage sensed on the 5-volt reference circuit at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage. |
| 5-V Reference 1–4 Circuit Status | — | OK | This parameter will display OK if the circuit is good or Malfunction if a short to ground, short to B+ or open circuit is present. |
| A/C Compressor Clutch Relay Command | — | Off | This parameter displays the current command of the A/C compressor clutch relay. |
| A/C Compressor Clutch Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the A/C compressor clutch relay control circuit. The parameter displays Malfunction if the A/C compressor clutch relay control circuit is shorted to voltage. |
| A/C Compressor Clutch Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the A/C compressor clutch relay control circuit. The parameter displays Malfunction if the A/C compressor clutch relay control circuit is shorted to ground. |
| A/C Compressor Clutch Relay Control Circuit Open Test Status | — | OK | This parameter displays the state of the A/C compressor clutch relay control circuit. The parameter displays Malfunction if the A/C compressor clutch relay control circuit is open. |
| A/C Disable - A/C Pressure Out of Range | — | No | This parameter displays YES if the A/C is disabled due to A/C pressure out of range. |
| A/C Disengage History 1–8 | — | Varies | This parameter displays one of the last eight reasons that powertrain has disengaged the air conditioning compressor. |
| A/C High side Pressure Sensor | A/C OFF | 1.43 Volts | This parameter displays 0–5 volts. The voltage applied to the ECM input for the A/C refrigerant pressure sensor. |
| | A/C ON | 2.39 Volts | |
| A/C High side Pressure Sensor | A/C OFF | 500–2,220 kPa (72–319 psi) | This parameter displays 0–3450 kPa (0–500 psi). The voltage applied to the ECM input from the A/C refrigerant pressure sensor is converted to a pressure value. |
| | A/C ON | 300–1,220 kPa (43–174 psi) | |
| A/C Off for WOT | — | No | This parameter displays if the A/C compressor is disabled due to a wide open throttle. |
| A/C Request Signal | — | Yes | This parameter displays YES if the A/C is requested on. |
| Accelerator Pedal Position | — | 0% | This parameter displays the accelerator pedal position in percentage. |
| Accelerator Pedal Position When Engine Overspeed Detected | — | % | This parameter displays the accelerator pedal position in percentage when the engine overspeed was detected. |
| Air/Fuel Equivalence Ratio Command | — | 1.0 | This parameter contains the commanded equivalence ratio. The equivalence ratio should be reported as 1.0 when the vehicle is in closed loop. |
| Ambient Air Temperature | — | Varies °C/°F | This parameter displays the outside temperature at any given altitude expressed in degrees. |
| Ambient Air Temperature When Recommended Maximum Fuel Alcohol Content Exceeded | — | °C (°F) | This parameter displays the estimated ambient air temperature at the most recent time that the recommended ethanol concentration was exceeded. |
| Ambient Humidity | — | Varies | This parameter displays the current ambient humidity in percentage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| APP Sensors | — | Varies | This parameter displays the average of the APP sensors as calculated by the throttle actuator control (TAC) module. The APP average is a range of values indicating a low number when the accelerator pedal is not depressed to a high number when the accelerator pedal is fully depressed. This value is listed in counts. |
| APP Sensor 1 and 2 | Accelerator pedal not actuated | 0.7–1.2 Volts | This parameter displays the voltage signal sent to the control module from APP sensor 1 of the APP sensor assembly. APP sensor 1 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed. |
|  | Accelerator pedal fully actuated | 4.2–4.5 Volts |  |
| APP Sensor 1 and 2 | — | Agree | This parameter displays the results of a control module test that compares the signals from the APP sensors 1 and 2 . The scan tool will display Agree or Disagree. Agree indicates that APP sensor 1 and APP sensor 2 voltages correspond to the same accelerator pedal position. Disagree indicates that APP sensor 1 and APP sensor 2 voltages correspond to different accelerator pedal positions. |
| APP Sensor 1-2 Circuit Status | — | OK | This parameter displays that the sensed accelerator pedal position 1 or 2 sensor value is currently out of range or that a Malfunction has been detected based upon the sensed accelerator pedal position 1 or 2 sensor value being out of range |
| APP Sensor 1-2 Learned Applied Position | — | % | This parameter displays the learned maximum (fully applied) accelerator pedal position. |
| APP Sensor 1-2 Learned Released Position | — | Volts | This parameter displays the accelerator pedal sensor 1 or 2 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. |
| APP Sensor 1-2 Position | Accelerator pedal not actuated | 0% | This parameter displays the angle of the APP sensor 1 as calculated by the control module using the signal from the APP sensor 1. APP sensor 1 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| APP Sensor 1-3 | Accelerator pedal not actuated | 0.7–0.2 Volts | This parameter displays the voltage signal sent to the control module from APP sensor 1 of the APP sensor assembly. APP sensor 1 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed. |
| APP Sensor 1 Indicated Position | Accelerator pedal not actuated | 0% | This parameter displays the angle of the APP sensor 1 as calculated by the control module using the signal from the APP sensor 1. APP sensor 1 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
|  | Accelerator pedal fully actuated | 100% |  |
| APP Sensor 2 | Accelerator pedal not actuated | 0.3–0.5 Volts | This parameter displays the voltage signal sent to the control module from APP sensor 2 of the APP sensor assembly. APP sensor 2 is a range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed. |
|  | Accelerator pedal fully actuated | 2.2–2.5 Volts |  |
| APP Sensor 2 Position | Accelerator pedal not actuated | 0% | This parameter displays the angle of the APP sensor 2 as calculated by the control module using the signal from the APP sensor 2. APP sensor 2 is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
|  | Accelerator pedal fully actuated | 100% |  |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| APP Sensor 1 and 2 | — | Agree | This parameter displays the results of a control module test that compares the signals from the APP sensors 1 and 2 . The scan tool will display Agree or Disagree. Agree indicates that APP sensor 1 and APP sensor 2 voltages correspond to the same accelerator pedal position. Disagree indicates that APP sensor 1 and APP sensor 2 voltages correspond to different accelerator pedal positions. |
| BARO | — | Varies with altitude | This parameter displays the barometric pressure as calculated by the control module using the signal from the MAP sensor measured when the ignition is turned ON with the engine not running. The control module will update the barometric pressure during wide-open throttle (WOT) conditions. |
| BARO Sensor | — | Volts | This parameter displays the barometric pressure sensor in volts. |
| Battery Sensor Module Battery State Information | Ignition ON | Available / Not Available | This parameter indicates if Battery State Information is Available or Not Available. Battery State Information is Not Available when there is a battery drain such as a parasitic draw. |
| Brake Pedal Position Circuit Signal | — | Closed | This parameter displays the state of the brake pedal position switch as determined by the brake pedal switch. The scan tool will display Open when the brake pedal is depressed, and Closed when the brake pedal is not depressed. |
| Brake Pedal Position Sensor | — | Volts | This parameter displays the brake pedal position as indicated by the analog sensor as a percentage of its reference voltage. |
| Brake Pedal Position Sensor | — | % | This parameter displays the displacement of the brake pedal, where 0% corresponds to the brake pedal being released and 100% corresponds to the brake pedal being fully applied. |
| Brake Pedal Position Sensor Fully Released Learn Status | — | Complete | This parameter displays the brake pedal fully released learn position status. |
| Brake Pedal Position Sensor Learned Released Position | — | Volts | This parameter displays the position learned for the brake pedal position sensor when the brake pedal is fully released. |
| Brake Pedal Position Sensor Signal | — | Released | This parameter displays the status of the brake pedal as determined by the ECM. |
| Brake Pedal Position Signal | — | Released | This parameter displays the state of the brake pedal position switch as determined by the brake pedal switch. The scan tool will display Applied when the brake pedal is depressed, and Released when the brake pedal is not depressed. |
| Calculated Air Flow | — | Varies g/s | This parameter displays the air flow as calculated by the control module. |
| Calculated BARO | — | Varies kPa | This parameter displays the barometric pressure as calculated by the control module. |
| Calculated Catalyst Temperature Bank 1 or 2 | — | Varies °C/°F | This parameter displays the catalyst temperature in bank 1 or 2 as calculated by the control module. |
| Calculated Engine Oil Temperature | — | Varies °C/°F | This parameter displays the estimated (modeled) engine oil temperature (as a function of engine coolant temperature and other parameters). |
| Camshaft Position | — | Varies ° | This parameter displays the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position (a value of zero represents the park position). |
| Camshaft Position Active Counter | — | Counts | This parameter displays a rolling count of the number of primary cam position sensor pulses. A change in the value of this parameter indicates primary camshaft position sensor activity |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Camshaft Position Actuator Solenoid Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the camshaft position actuator solenoid control circuit. The parameter displays Malfunction if the camshaft position signal circuit is shorted to voltage. |
| Camshaft Position Actuator Solenoid Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the camshaft position actuator solenoid control circuit. The parameter displays Malfunction if the camshaft position signal circuit is shorted to ground. |
| Camshaft Position Actuator Solenoid Control Circuit Open Test Status | — | OK | This parameter displays the state of the camshaft position actuator solenoid control signal circuit. The parameter displays Malfunction if the camshaft position signal circuit is open. |
| Camshaft Position Command | — | Percentage | This parameter displays the commanded duty cycle from the engine control module for the intake camshaft phase of the Throttle Position for bank 1. |
| Camshaft Position Sensor | — | Engine Idle Speed | This parameter displays the engine speed as calculated by the control module using the signal from the CMP sensor. |
| Camshaft Position Variance | — | degrees | This parameter displays the absolute difference between the desired and actual positions of the intake camshaft for bank 1 in terms of degrees of camshaft rotation. |
| Catalyst Monitor Complete | — | Yes/No | This parameter indicates the status of the Catalyst. The scan tool displays YES when the diagnostic is complete. And NO if the diagnostic has Not ran or a malfunction is detected in the Catalyst. |
| Catalyst Monitor Complete This Ignition Cycle | — | Yes/No | This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates YES or NO when the catalyst monitor diagnostic is actively running a test. |
| Catalyst Monitor Enabled | — | Yes/No | The scan tool displays YES when the Catalyst Monitor is Enabled. If the scan tool displays NO this could indicate a malfunction in the Catalyst Monitor circuit. |
| Catalyst Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter indicates the status of the catalyst monitor diagnostic. Catalyst Monitor Test Running indicates YES or NO when the catalyst monitor diagnostic is actively running a test. |
| Catalyst Monitor Not At Idle Test Conditions Met | — | Yes/No | This parameter indicates if the off idle conditions for the catalyst monitor diagnostic have been met. |
| Catalyst Monitor Test Counter Bank 1 or 2 | — | Counts | This parameter contains the number of iterations of the catalyst monitor diagnostic test that have been performed since a code clear for bank 1 or 2. |
| Catalyst Monitor Test Result Bank 1 or 2 | — | No Decision | This parameter indicates the status of the catalyst monitor diagnostic for bank 1 or 2. Multiple tests may run before the diagnostic reports a Passed or Failed result. |
| Catalyst Monitor Test State | — | Inactive | This parameter indicates the current state of the catalyst monitor test. |
| Change Engine Oil Indicator Command | — | No | This parameter displays the state of the change engine oil lamp control circuit as commanded by the control module. |
| Clutch Pedal Starter Inhibit Switch | — | Off | This parameter displays the current state of the clutch pedal starter inhibit switch. |
| Clutch Pedal Switch | — | Applied | This parameter displays the current state of the clutch pedal. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cold Startup | — | Yes/No | This parameter displays whether the engine meets the conditions for a cold startup during the present ignition cycle. The scan tool displays YES when the conditions for a cold startup are met during this ignition cycle. The scan tool displays NO when the conditions for a cold startup are not met during the present ignition cycle. Conditions for a cold startup require the coolant temperature and the intake air temperature to be below a predetermined temperature and within a certain range of each other. These conditions must occur after the engine was warmed up to a specific temperature during the previous ignition cycle. |
| Component Monitor Complete | — | Yes/No | This parameter displays Yes when the Component Monitor is Complete. The engine control module looks at many input and output components to make this determination. If a malfunction is detected the scan tool will display NO. |
| Component Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays Yes when the Component Monitor has completed this ignition cycle. The engine control module looks at many input and output components to make this determination. If a malfunction is detected the scan tool will display NO. |
| Component Monitor Enabled | — | Yes/No | This parameter displays Yes when Component Monitor is Enabled. And No when it is not Enabled. |
| Component Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays Yes when Component Monitor is Enabled this ignition cycle. And No when it is not Enabled this ignition cycle. |
| Cooling Fan Command | — | % | This parameter displays the cooling fan duty cycle. |
| Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is shorted to voltage. |
| Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is shorted to ground. |
| Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Control Circuit Open Test Status | — | OK | This parameter displays the state of the cooling fan control circuit. The parameter displays Malfunction if the cooling fan control circuit is open. |
| Cooling Fan Relay 1, Relay 2, or Relay 2 and 3 Command | — | On/Off | This parameter displays the current cooling fan relay 1 command. |
| Cooling Fan Speed | — | RPM | This parameter displays the current fan speed in RPMs. |
| CPP Learned Apply Position | — | V | This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is fully applied during the associated learn procedure. |
| CPP Learned Release Position | — | V | This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is released. |
| CPP Sensor | — | V | This parameter displays the clutch pedal position sensor analog input as a percentage of its reference voltage. |
| CPP Sensor | — | % | This parameter displays the position learned for the clutch pedal position sensor when the clutch pedal is fully applied during the associated learn procedure. |
| Crank Request Signal | — | No | This parameter displays the state of the crank request input to the control module from the ignition switch. The scan tool will display Yes when the ignition switch is in the Crank position. The scan tool will display No when the ignition switch is in any other position. |
| Crankshaft Position Active Counter | — | Incrementing | This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position (CKP) sensor. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Crankshaft Position Signal Output Circuit High Voltage Test Status | — | OK | This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is shorted to voltage. |
| Crankshaft Position Signal Output Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is shorted to ground. |
| Crankshaft Position Signal Output Circuit Open Test Status | — | OK | This parameter displays the state of the crankshaft position signal output circuit. The parameter displays Malfunction if the crankshaft position signal output circuit is open. |
| Crankshaft Position Variation Learn | — | Learn in Progress / Learning Not Enabled | This parameter displays the crankshaft position variation learn status. The scan tool shows Learn in Progress until the learn is completed. The ECM learns the new variation values at each ignition cycle. |
| Crankshaft Position Variation Learn Attempts | — | Counts | This parameter displays the crankshaft position variation learn attempts. The ECM learns the new variation values at each ignition cycle. |
| Crankshaft Position Variation Learn Required Engine Speed | — | In Range / Out Of Range | This parameter displays if the crankshaft position variation learn has reached the required engine speed. |
| Crankshaft Position Variation Learn Status | — | Complete / Not Complete | This parameter displays the status of the crank angle sensing error learn algorithm. |
| Crankshaft Position Resync Counter | — | Varies | This parameter displays the number of times the control module has to synchronize the CKP sensor. |
| Crankshaft Position Sensor | — | Engine Idle Speed | This parameter displays the engine speed as calculated by the control module using the signal from the CKP sensor. |
| Cruise Control | — | Inactive | This parameter displays the status of the cruise control system as determined by the control module. The scan tool will display Yes when the cruise control system is in control of vehicle speed. The scan tool will display No when the cruise control system is not operating. |
| Cruise Control Cancel Switch | — | Active | This parameter displays the status of the cruise control cancel switch as determined by the control module. The scan tool will display Active when the cruise control cancel switch is on. The scan tool will display Inactive when the cruise control cancel switch is off. |
| Cruise Control Inhibit Reason | — | Varies | The parameter displays the reason the cruise control system cannot engage. |
| Cruise Control On/Off Switch | — | Off | This parameter displays the state of the On/Off switch input to the control module . The scan tool will display On when the cruise On/Off switch is On. The scan tool will display Off when the cruise On/Off switch is Off. |
| Cruise Control Resume/ Acceleration Switch | — | Inactive | This parameter displays the state of the Resume/Accel switch input to the control module When the cruise control switch is in the On position and the Resume/ Accel switch is activated, the scan tool displays Active. When the Resume/Accel switch is released the scan tool displays Inactive. |
| Cruise Control Set/Coast Switch | — | Inactive | This parameter displays the state of the Set/Coast switch input to the control module from the cruise control system. When the cruise control switch is in the on position and the Set/Coast switch is activated, the scan tool displays Active. When the Set/Coast switch is released the scan tool displays Inactive. |
| Cruise Disengage 1–8 History | Cruise ON | None | The Scan tool displays the last 8 cruise control disengages in order from 1 to 8. There are 20 possible causes for the cruise control to disengage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cruise Resume/Acceleration Switch | — | Invalid | This parameter displays the state of the Resume/Accel switch input to the control module When the cruise control switch is in the ON position and the Resume/Accel switch is activated, the scan tool displays ON. When the Resume/Accel switch is released the scan tool displays OFF. |
| Current Gear | — | # | This parameter contains the current measured, or 'active' forward gear in the transmission as interpreted or determined in the Engine Control Module. |
| Current Gear When Engine Overspeed Detected | — | # | This parameter contains the transmission actual gear observed upon initial detection of an overspeed condition.  This value will be updated upon each subsequent overspeed condition. |
| Cycles of Misfire Data | — | Incrementing 0–100 | This parameter displays the number of cylinder firing events recorded by the control module |
| Cyl. 1,4,6,7 Deactivation Solenoid Valve Command | — | Off | This parameter displays On when V4 mode is commanded or Off when V8 mode is commanded. |
| Cyl. 1 - 8 Deactivation Solenoid Command | — | Cyl. On/Cyl. Off | This parameter displays Cyl. On when V4 mode is commanded or Cyl. Off when V8 mode is commanded. |
| Cyl. Deactivation Disable - Disable 1–8 History | — | Varies | This parameter shows the reason the Active Fuel Management system changed from V4 mode to V8 mode, for the last 8 occurrences.<br>• Ignition Voltage<br>• Engine Oil Pressure<br>• Engine Oil Temperature<br>• ECT<br>• Engine Speed<br>• Transmission Gear<br>• Transmission Range<br>• Transmission Shifting<br>• Control Function Active<br>• Minimum Time On All Cylinders<br>• Maximum Deactivation Time Exceeded<br>• Oil Aeration<br>• Deceleration Fuel Cut-Off<br>• Injector Stable Time<br>• Heater Performance<br>• MAP Sensor DTC<br>• Brake Booster Pressure Sensor DTC<br>• TAC System DTC<br>• Engine Oil Pressure Sensor DTC<br>• ECT Sensor DTC<br>• IAT Sensor DTC<br>• VSS DTC<br>• Cylinder Deactivation Solenoid Valve DTC<br>• Misfire DTC<br>• Crankshaft Position Sensor DTC<br>• Camshaft Position Sensor DTC<br>• Engine Controls Ignition Relay DTC<br>• Torque Reduction |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| | | | • Axle Torque Limiting<br>• Engine Overtemperature Protection Active<br>• Catalyst Overtemperature Protection<br>• Piston Protection<br>• Hot Coolant Mode<br>• Engine Overspeed Protection Active<br>• A/C Compressor Clutch On<br>• HO2S 2 Test<br>• 4WD Low Engaged<br>• Vehicle Speed Too Low<br>• Acceleration Request<br>• Catalyst Temperature Low<br>• Cylinder Deactivation System DTC<br>• Calculated Torque<br>• 4WD Low State Invalid<br>• Minimum Time After TAC DTC<br>• Hybrid/EV Powertrain Control Module Request<br>• Fuel Alcohol Content Learn In Progress<br>• Fuel Alcohol Content Too High<br>• Maximum Throttle Exceeded |
| Cylinder Deactivation Performance Test | — | OK | This parameter displays OK if all the Active Fuel Management enabling conditions are met. The parameter displays Fault if one or more enabling conditions are out of range. |
| Cylinder Deactivation System Command | — | All Cylinder | This parameter displays several signals associated with the status of the Active Fuel Management system. |
| Cylinder Deactivation Cycles | — | Counts | This parameter displays the number of times the engine switches between V8 mode, and V4 mode during each ignition cycle. The counter will reset to zero and increment again, if the count reaches 255 during the current ignition cycle. |
| Cylinder 1, 4, 6, 7 Current Misfire Counter | — | Counts | This parameter displays the number of misfires detected for cylinder's 1–8 within the current 100 engine cycle test interval. The set of misfire counters for the individual cylinders are maintained such that if a single misfire is detected over an engine cycle. |
| Cylinder 1, 4, 6, 7 Deactivation Solenoid Valve Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the deactivation solenoid valve control circuit. The parameter displays Malfunction if the deactivation solenoid valve control circuit is shorted to voltage. |
| Cylinder 1, 4, 6, 7 Deactivation Solenoid Valve Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the deactivation solenoid valve control circuit. The parameter displays Malfunction if the deactivation solenoid valve control circuit is shorted to ground. |
| Cylinder 1–8 History Misfire Counter | — | Counts | This parameter displays the number of misfires detected for cylinder's 1–8 since a misfire failure has been reported. |
| Cylinder 1–8 Injector Control Circuit Status | — | OK | This parameter displays the status of the fuel injector's 1–8 output malfunction for Short circuit from injector high side to ground or system voltage, Short circuit from injector low side to injector low side, Short circuit from injector low side to ground or system voltage, Short circuit from injector high side to low side and Injector open circuit. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cylinder 1–8 Injector Disabled - Misfire Detected | — | No | This parameter displays when an injector is disabled in a specific engine cylinder due to a misfire being detected. |
| Cylinder 1–8 Knock Detected | — | No | This parameter indicates if a knock has been detected over a calibratable sample period. |
| Cylinder Deactivation Cycles | — | Counts | This parameter displays the number of times the engine switches between V8 mode, and V4 mode during each ignition cycle. |
| Cylinder Deactivation Inhibit Reason | — | Yes/No | This parameter displays Yes if one of the following Deactivation Inhibit Reasons is detected.<br>• Engine Coolant<br>• Temperature Out of Range<br>• Engine Oil Temperature Out of Range<br>• Engine Oil Pressure Out of Range<br>• Ignition Voltage Out of Range<br>• Accelerator Pedal Position High<br>• Accelerator Pedal Position Increase High<br>• Brake Vacuum Pressure Low<br>• Engine Manifold Vacuum Pressure Low<br>• Engine Oil Aeration Present<br>• Maximum Deactivation Time Exceeded<br>• Minimum Time with All Cylinders Activated Not Met<br>• All Cylinders Activated via Device Control<br>• Transmission Gear Shift in Progress<br>• Transmission Range Incorrect<br>• Transmission Gear Incorrect<br>• Engine Speed Out of Range<br>• Tip In Bump Active<br>• Vehicle Speed Too Low<br>• In 4WD Low State<br>• POSD Intrusive Active<br>• AC Clutch Being Engaged<br>• Heater Performance<br>• Fuel Shut-Off Stability Timer Active<br>• Decel Fuel Cutoff Active<br>• Maximum Throttle Exceeded<br>• Ethanol Concentration Too High<br>• Ethanol Learn In Progress<br>• ETC Disable Time<br>• Catalyst Temperature Low<br>• Displacement on Demand Solenoid Driver Fault<br>• Vehicle Speed Fault<br>• Intake Air Temperature Sensor Fault<br>• Engine Coolant Temperature Sensor Fault<br>• Engine Oil Pressure Sensor Fault<br>• Electronic Throttle Control Reduced Engine Power Active |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| | | | • Brake Vacuum Pressure Sensor Fault<br>• Manifold Absolute Pressure Sensor Fault<br>• Catalyst Converter Overtemperature Protection Active<br>• Engine Metal Overtemperature Protection Active<br>• Axle Torque Limiting Active (Obsolete)<br>• Brake Torque Management Active (Obsolete)<br>• Powertrain Relay Fault<br>• Cam Sensor Fault<br>• Crank Sensor Fault<br>• Engine Misfire Detected<br>• Invalid 4WD Low State<br>• Torque Model Inaccurate Fault<br>• Cylinder Deactivation System Fault<br>• Engine Overspeed Protection Active<br>• Hot Coolant Mode Active<br>• Piston Protection Active |
| Cylinder Deactivation Performance Test | — | OK | This parameter displays OK if all the Active Fuel Management enabling conditions are met. The parameter displays Malfunction if one or more enabling conditions are out of range. |
| Cylinder Deactivation Performance Test | — | OK | This parameter displays if the commanded cylinder deactivation failed.  This indicates that one or more cylinders failed to deactivate when commanded to do so by displacement by demand. |
| Cylinder Deactivation System Command | — | All Cylinder | This parameter displays several signals associated with the status of the Active Fuel Management system. |
| Deceleration Fuel Cut-Off | — | Inactive | This parameter displays the status of the operating mode used to turn OFF the fuel injectors during certain deceleration conditions. When the scan tool displays Active, the control module has turned OFF the fuel injectors. When the scan tool displays Inactive, the fuel system is operating normally. |
| Desired Camshaft Position | — | 0 degrees | This parameter displays the set point for the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position. |
| Desired Fuel Rail Pressure | — | MPa / PSI | This parameter displays the desired fuel rail pressure at the engine. |
| Desired Idle Speed | — | RPM | This parameter displays the desired idle engine speed after the application of all limits and corrections. |
| Desired Intake Camshaft Position | — | ° | This parameter displays the set point for the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position. |
| Desired Throttle Position | — | % | This parameter displays the desired throttle position used to control the throttle motor, which is determined from the arbitration of the various requests for the authority to control the throttle, including remedial actions. |
| Distance Since DTC Cleared | — | km / miles | This parameter displays the distance accumulated since an emission diagnostic trouble code was cleared. The scan tool will display increasing distance as the vehicle is driven. |
| Distance Since First Malfunction | — | Varies | This parameter displays the distance accumulated when the emission diagnostic trouble code first failed. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Distance Since Last Malfunction | — | km / miles | The parameter displays the distance driven since the last engine controls malfunction. |
| Distance Since Last Oil Level Warning | — | km / miles | This parameter displays the distance driven since the last oil level warning. |
| Distance Since Last Oil Pressure Warning | — | km / miles | This parameter displays the distance driven since the last oil pressure warning. |
| Distance Since Recommended Maximum Fuel Alcohol Content Exceeded | — | km / miles | This parameter displays the accumulated distance driven since the most recent time that the recommended ethanol concentration was exceeded. |
| Distance with Cylinder Activated | — | km/miles | This parameter displays the accumulated distance driven with all of the engine's cylinders activated during the current Ignition key cycle. |
| Distance with Cylinder Deactivated | — | km/miles | This parameter displays the accumulated distance driven with the engine's cylinders deactivated during the current Ignition key cycle. |
| Drag Control Status | — | Active / Inactive | This parameter displays Active when the requested torque signal is above the driver requested value while the traction control system signal input is active. |
| Driver Requested Axle Torque | — | N•m | This parameter displays a (desired) output value after comparing engine load as an input to the hybrid control processor and engine control module.<br>**Note:** Comparing this parameter to the Engine Torque Actual parameter can be useful in diagnosing a concern. The values between these 2 parameter should be similar. |
| Drop-Throttle Detected while Traction Control Active | — | No | This parameter displays if a drop-throttle was detected while the traction control was active. |
| Drop-Throttle Status | — | Inactive | This parameter displays the status of a drop-throttle. |
| Engine Controls Ignition Relay Feedback Signal | — | Battery Voltage | This parameter displays the voltage signal sent to the control module from the engine control ignition relay. The scan tool will display battery voltage when the engine is running. The scan tool will display no voltage when the relay is OFF. |
| ECM Challenge Status | — | Valid | This parameter shows the immobilizer system status of the ECM challenge. This indicates whether the currently calculated ECM challenge is valid. |
| ECM in Immobilizer Fail Enable | — | No | This parameter displays whether or not the engine control module (ECM) is in failure enable mode for the vehicle theft deterrent (VTD) system. |
| ECT Sensor | — | Varies °C/°F | This parameter displays the temperature of the engine coolant based on the input from the engine coolant temperature (ECT) sensor. When the coolant temperature is low, the scan tool will display a low temperature. When the coolant temperature is high, the scan tool will display a high temperature. |
| EGR/Camshaft Position Monitor Complete | — | Yes/No | This parameter displays the status of the EGR/ Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete. |
| EGR/Camshaft Position Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the status of the EGR/ Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete this Ignition Cycle. |
| EGR/Camshaft Position Monitor Enabled | — | Yes/No | This parameter displays the status of the EGR/ Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| EGR/Camshaft Position Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the status of the EGR/ Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled this Ignition Cycle. |
| Electric Power Management Inhibit Reason | — | None | This parameter displays the reason of the Regulated Voltage Control (RVC) override command. RVC lowers system operating voltage to reduce system electrical load and improve fuel economy performance. |
| Engine Controls Ignition Relay Command | — | On/Off | This parameter displays the state of the control circuit for the engine control module power relay as commanded by the engine control module. |
| Engine Controls Ignition Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the engine controls ignition relay control circuit. The parameter displays Malfunction if the engine controls ignition relay control circuit is shorted to voltage. |
| Engine Controls Ignition Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the engine controls ignition relay control circuit. The parameter displays Malfunction if the engine controls ignition relay control circuit is shorted to grounded. |
| Engine Controls Ignition Relay Control Circuit Open Test Status | — | OK | This parameter displays the state of the engine controls ignition relay control circuit. The parameter displays Malfunction if the engine controls ignition relay control circuit is open. |
| Engine Controls Ignition Relay Feedback Signal | — | Battery Voltage | This parameter displays the voltage of the powertrain relay feedback to the controller. |
| Engine Load | — | 25–30% | This parameter displays the engine load in percent based on inputs to the control module from various engine sensors. The scan tool will display a low percentage when the engine is at idle with little or no load. The scan tool will display a high percentage when the engine is running at a high RPM under a heavy load. |
| Engine Load During Misfire History 1 - 5 | — | % | This parameter displays the specific engine speed and load in which the engine was operating for one of the last five misfire events immediately prior to Misfire Test Failed This Key On (TFTKO) = True. |
| Engine Off Time | — | hh:mm:ss | This parameter displays the time elapsed since the engine turned OFF. The scan tool will display the time in hours, minutes and seconds. The engine OFF time will reset to zero when the engine starts. |
| Engine Oil Level Switch | — | OK | This parameter displays the status of the engine oil level switch as determined by the control module. The control module uses this information to turn on the low engine oil lamp if the engine oil level remains approximately 1 quart low for a sufficient amount of time. The scan tool will display Low when the engine oil level is low. The scan tool will display OK when the engine oil level is correct. |
| Engine Oil Life Remaining | — | % | This parameter displays the amount engine oil life remaining before requiring an oil change based on calculations by the control module. The scan tool will display lower values as the engine oil life approaches 0 miles. |
| Engine Oil Pressure Sensor | — | kPa/PSI | This parameter displays the actual engine oil pressure measured by a sensor. |
| Engine Oil Pressure Switch | — | OK | This parameter displays the state of the engine oil pressure (EOP) as determined by the control module. The control module monitors the EOP switch to determine if the EOP is sufficient. The scan tool will display low when the EOP is below a predetermined value. |
| Engine Oil Temperature Sensor | — | Varies °C/°F | This parameter displays the engine oil temperature. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Engine Oil Temperature When Engine Overspeed Detected | — | Varies °C/°F | This parameter displays the engine oil temperature when the engine overspeed was detected. |
| Engine Overspeed | — | Not Present | This parameter displays if an engine overspeed is detected. The scan tool will display Present when an engine overspeed is detected. |
| Engine Run Time | — | hh:mm:ss | This parameter displays the time elapsed since the engine was started. The scan tool will display the time in hours, minutes and seconds. The engine run time will reset to zero when the engine stops running. |
| Engine Serial Number | — | # | This parameter displays the engine serial number. |
| Engine Shutdown Counter | — | Counts | This parameter displays the engine shutdown counts for specific reasons including excessive idle, high coolant temperature, low coolant level, or low oil level. |
| Engine Speed | — | 600 RPM | This parameter displays the speed of the crankshaft as determined by the control module using an input from the CKP sensor. The scan tool will display a high value at high engine speeds and a low value at low engine speeds. |
| Engine Speed During Misfire History 1 - 5 | — | RPM | This parameter displays the speed of the crankshaft as determined by the control module using an input from the CKP sensor at the time of engine misfire. |
| Engine Speed When Engine Overspeed Detected | — | RPM | This parameter displays the speed of the crankshaft as determined by the control module using an input from the CKP sensor at the time of engine overspeed. |
| EVAP Malfunction History | — | Varies | This parameter contains the result of the most recently completed evaporative emissions diagnostic test. |
| EVAP Monitor Complete | — | Yes/No | This parameter displays if the most recent evaporative emissions diagnostic test is complete. |
| EVAP Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays if the most recent evaporative emissions diagnostic test has completed this ignition cycle. |
| EVAP Monitor Enabled | — | Yes/No | This parameter displays if the evaporative emissions diagnostic test is enabled. |
| EVAP Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays if the evaporative emissions diagnostic test is enabled this ignition cycle. |
| EVAP Purge Solenoid Valve Command | — | % | This parameter displays the on-time or duty cycle of the EVAP purge solenoid commanded by the control module expressed as a percent. The scan tool will display a high percentage when the control module is commanding the EVAP purge solenoid to be open a large amount . The scan tool will display a low percentage when the control module is commanding the EVAP purge solenoid to be open a small amount. The scan tool will display 0 when the control module is commanding the EVAP purge solenoid closed. |
| EVAP Purge Solenoid Valve Control Circuit High Voltage Test Status | — | OK | This parameter displays the EVAP purge solenoid valve control circuit. The parameter displays Malfunction if the EVAP purge solenoid valve circuit is shorted to voltage. |
| EVAP Purge Solenoid Valve Control Circuit Low Voltage Test Status | — | OK | This parameter displays the EVAP purge solenoid valve control circuit. The parameter displays Malfunction if the EVAP purge solenoid valve circuit is shorted to ground. |
| EVAP Purge Solenoid Valve Control Circuit Open Test Status | — | OK | This parameter displays the EVAP purge solenoid valve control circuit. The parameter displays Malfunction if the EVAP purge solenoid valve circuit is open. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| EVAP Vent Solenoid Valve Command | — | Venting | This parameter displays the state of the EVAP vent solenoid commanded by the control module. The scan tool will display venting when the control module is commanding the EVAP vent solenoid to be open. The scan tool will display a not venting when the control module is commanding the EVAP vent solenoid to be closed. |
| EVAP Vent Solenoid Valve Control Circuit High Voltage Test Status | — | OK | This parameter displays the EVAP vent solenoid valve control circuit. The parameter displays Malfunction if the EVAP vent solenoid valve circuit is shorted to voltage. |
| EVAP Vent Solenoid Valve Control Circuit Low Voltage Test Status | — | OK | This parameter displays the EVAP vent solenoid valve control circuit. The parameter displays Malfunction if the EVAP vent solenoid valve circuit is shorted to ground. |
| EVAP Vent Solenoid Valve Control Circuit Open Test Status | — | OK | This parameter displays the EVAP vent solenoid valve control circuit. The parameter displays Malfunction if the EVAP vent solenoid valve circuit is open. |
| Extended Travel Brake Pedal Position Circuit Signal | — | Applied / Released | This parameter displays that no failures have been detected in the determination of the Brake Pedal Moderate Travel Achieved signal within the platform brake sensing module as received over serial communication. |
| Extended Travel Brake Pedal Position Signal | — | Applied, Released, Invalid | This parameter displays the undefaulted determination of brake pedal travel beyond a moderate/extended travel threshold by the platform brake sensing module and is received over serial communication. |
| Extended Travel Brake Pedal Switch | — | Applied / Released | This parameter displays that no failures have been detected in the determination of the Brake Pedal Moderate Travel Achieved signal within the platform brake sensing module as received over serial communication. |
| Freeze Frame DTC | — | # | This parameter displays the diagnostic trouble code (DTC) that caused the freeze frame to be stored. |
| Fuel Alcohol Content | — | % | This parameter indicates the percentage of alcohol contained in ethanol or methanol fuels. |
| Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded | — | % | This parameter displays the actual fuel alcohol percentage at the most recent time that the recommended ethanol concentration was exceeded. |
| Fuel Composition Learn | — | Active / Inactive | This parameter indicates if the fuel composition learn status is active. |
| Fuel Composition Sensor | — | Hz | This parameter displays the frequency of the fuel composition sensor. |
| Fuel Composition Sensor | — | Ms | This parameter displays the fuel composition sensor on time. |
| Fuel Consumed Since Recommended Maximum Fuel Alcohol Content Exceeded | — | Liters | This parameter displays the amount of fuel consumed since the most recent time that the recommended ethanol concentration was exceeded. |
| Fuel Control Loop Status | — | Closed | This parameter displays the fuel system loop status. |
| Fuel Economy | — | L/h | This parameter displays the instantaneous fuel consumption rate of the engine in liters per hour. |
| Fuel Enrichment - Hot Catalyst | — | Yes/No | This parameter displays Yes when fuel is being added to cool the catalytic converter. |
| Fuel Enrichment - Hot Coolant | — | Active / Inactive | This parameter displays Active when the conditions to enable hot coolant enrichment are active and that a richer than stoichiometric air/fuel ratio is being commanded in order to help cool the engine when a system malfunction is causing the engine to run at extreme temperatures. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Level Sensor | — | 0–5 Volts | This parameter displays the voltage signal received by the control module from the fuel level sensor. |
| Fuel Level Sensor Left Tank | — | 0–5 Volts | This parameter displays the voltage signal received by the control module from the fuel level sensor for the left tank. |
| Fuel Level Sensor Right Tank | — | 0–5 Volts | This parameter displays the voltage signal received by the control module from the fuel level sensor for the right tank. |
| Fuel Pressure Regulator 1 Control Circuit Command | — | On/Off | This parameter displays the commanded state of the fuel pressure regulator 1 low side output. |
| Fuel Pressure Regulator 1 Control Circuit High Voltage Test Status | — | OK | This parameter displays the diagnostic state of the fuel pressure regulator control circuit as determined by the control module. The scan tool will display OK, Malfunction or Not Run. The scan tool will display OK if the circuit is operating correctly. |
| Fuel Pressure Regulator 1 Control Circuit Low Voltage Test Status | — | OK | This parameter displays the diagnostic state of the fuel pressure regulator control circuit as determined by the control module. The scan tool will display OK, Malfunction or Not Run. The scan tool will display OK if the circuit is operating correctly. |
| Fuel Pressure Regulator 1 Control Circuit Open Test Status | — | OK | This parameter displays the diagnostic state of the fuel pressure regulator control circuit as determined by the control module. The scan tool will display OK, Malfunction or Not Run. The scan tool will display OK if the circuit is operating correctly. |
| Fuel Pressure Regulator 1 High Control Circuit Command | — | % | This parameter displays the commanded duty cycle for the fuel pressure regulator 1 solenoid output. |
| Fuel Pressure Regulator 1 High Control Circuit Command | — | On/Off | This parameter displays the commanded state of the fuel pressure regulator 1 high side output. |
| Fuel Pressure Regulator 1 High Control Circuit High Voltage Test Status | — | OK, Malfunction, Not Run | This parameter displays the state of the fuel pressure regulator circuit voltage. The parameter displays Malfunction if the fuel pressure regulator circuit voltage is shorted to voltage. |
| Fuel Pressure Regulator 1 High Control Circuit Low Voltage Test Status | — | OK, Malfunction, Not Run | This parameter displays the state of the fuel pressure regulator circuit voltage. The parameter displays Malfunction if the fuel pressure regulator circuit voltage is shorted to ground. |
| Fuel Pressure Regulator 1 High Control Circuit Open Test Status | — | OK, Malfunction, Not Run | This parameter displays the state of the fuel pressure regulator circuit voltage. The parameter displays Malfunction if the fuel pressure regulator circuit voltage is open. |
| Fuel Pressure Sensor | — | kPa / PSI | This parameter displays fuel rail pressure at the engine when the reading is referenced to atmosphere (gauge pressure). |
| Fuel Pump Enable Circuit High Voltage Test Status | — | OK | This parameter displays the state of the fuel pump enable circuit voltage. The parameter displays Malfunction if the fuel pump enable circuit voltage is shorted to voltage. |
| Fuel Pump Enable Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the fuel pump enable circuit voltage. The parameter displays Malfunction if the fuel pump enable circuit voltage is shorted to grounded. |
| Fuel Pump Enable Circuit Open Test Status | — | OK | This parameter displays the state of the fuel pump enable circuit voltage. The parameter displays Malfunction if the fuel pump enable circuit voltage is open. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Pump Enabled Command | — | On | This parameter displays the commanded state of the Fuel Pump control circuit. The fuel pump should be On when the scan tool indicates the Fuel Pump Enable command is On. The fuel pump should be OFF when the scan tool indicates the Fuel Pump Enable +-*+Command is Off. |
| Fuel Pump Trim | Engine Running | 0–4 % | This parameter displays the adjustments for the fuel pump duty cycle control. This is calculated by comparing the estimated fuel rail pressure to the desired fuel rail pressure. If the short term fuel pump trim consistently deviates from 0, the long term fuel pump trim is adjusted accordingly. |
| Fuel Rail Pressure Sensor | — | Volts | This parameter displays the fuel rail pressure analog input as a percentage of its reference voltage. |
| Fuel System Monitor Complete | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| Fuel System Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| Fuel System Monitor Enabled | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| Fuel System Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| Fuel Tank Pressure Sensor | — | 1.5 Volts | This parameter displays the voltage signal sent to the control module from the sensor used to monitor the pressure inside the fuel tank. The scan tool will display a low voltage when the pressure in the fuel tank is high. The scan tool will display a high voltage when the pressure in the fuel tank is low or in a vacuum. |
| Fuel Tank Pressure Sensor | — | 0 inches H2O (0 mm Hg) | This parameter displays the fuel tank pressure as calculated based on a signal sent to the control module from the fuel tank pressure (FTP) sensor. The scan tool will display a low value when the pressure in the fuel tank is low or a vacuum. The scan tool will display a high value when the pressure in the fuel tank is high. |
| Fuel Tank Rated Capacity | — | Varies | This parameter displays the rated maximum quantity of fuel the fuel tank will hold. This is calibrated in the control module to match the vehicle. See Owner's Manual-Capacities and Specifications. |
| Fuel Trim Cylinder Balance Test Bank 1 or 2 | — | Active/Inactive | This parameter displays the current state of the AFIM. A value of “Active” indicates that the monitor is currently performing an evaluation of the specified bank. A value of “Inactive” indicates that the monitor is NOT currently performing an evaluation of the specified bank. |
| Fuel Trim Cylinder Balance Test Counter Bank 1 or 2 | — | Counts | This parameter displays the number of Air Fuel Imbalance Monitor tests that have been performed since a code clear or NVM reset for bank 1 or 2. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Trim Learn | — | Enabled | This parameter indicates if the control module is adjusting long term fuel trim in response to the short term fuel trim. The scan tool displays Enabled or Disabled. When conditions are appropriate for enabling long term fuel trim corrections, the scan tool displays Enabled. |
| Fuel Trim Memory Cell | — | # | This parameter displays the index of the entry within the array of long term fuel corrections that is active based upon the current operating conditions (MAP, engine speed, purge duty cycle, A/C compressor state, and transmission range). |
| Fuel Trim System Test State | — | Monitoring | This parameter indicates the status of the Fuel Trim System Test. The scan tool will display Disabled, Enabled, Monitoring, or Run Purge Test. |
| Fuel Volatility | — | Varies | This parameter indicates the rate the fuel can be vaporized in the cylinder as calculated by the control module. The scan tool displays Low, Moderate, or High. The scan tool will display High when the fuel volatility is high. The scan tool will display Low when the fuel volatility is low. |
| Generator F-Terminal Signal | — | % | This parameter displays the filtered generator F-terminal duty cycle. |
| Generator Indicator Command | — | On/Off | This parameter displays signals associated with the status of the generator. |
| Generator L-Terminal Circuit High Voltage Test Status | — | OK | This parameter displays the state of the generator l-terminal circuit voltage. The parameter displays Malfunction if the generator l-terminal circuit voltage is shorted to voltage. |
| Generator L-Terminal Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the generator l-terminal circuit voltage. The parameter displays Malfunction if the generator l-terminal circuit voltage is shorted to ground. |
| Generator L-Terminal Circuit Open Test Status | — | OK | This parameter displays the state of the generator l-terminal circuit voltage. The parameter displays Malfunction if the generator l-terminal circuit voltage is open. |
| Generator L-Terminal Command | — | % | This parameter displays the commanded state of generator L-terminal duty cycle in percentage. |
| Generator L-Terminal Signal Command | — | On/Off | This parameter displays the commanded state of the generator L-terminal output |
| Heated Catalyst Monitor Complete | — | Yes | This parameter indicates the status of the heated catalyst. The scan tool displays Yes when the diagnostic is complete. And No if the diagnostic has not ran or a malfunction is detected in the heated catalyst. |
| Heated Catalyst Monitor Enabled | — | Yes | This parameter indicates the status of the heated catalyst monitor diagnostic. Catalyst Monitor Test Running indicates Yes or No when the heated catalyst monitor diagnostic is actively running a test. |
| HO2S Bank 1 or 2 Sensor 1 or Sensor 2 | — | Volts | This parameter indicates the heated oxygen sensor (HO2S) bank 1 or bank 2, sensor 1 output voltage as measured by the control module. The scan tool value fluctuates constantly while operating in Closed Loop. The scan tool will display a higher value during rich running conditions, and a lower value during leaner running conditions. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| HO2S Heater Bank 1 or 2 Sensor 1 or 2 | — | mA | This parameter displays the current through the control module when the bank 1 or bank 2, sensor 1 HO2S heater is commanded ON by the control module. HO2S Heater Bank 1 Sen. 1 is a range of values indicating a low current when the heater circuit resistance is high to a high current when the heater circuit resistance is low. |
| HO2S Heater Command Bank 1 - 2 Sensor 1 - 2 | — | 0–99% | This parameter displays the commanded state of the Bank 1 Sensor 2 heater by the control module. The scan tool will display a higher value as the heater command is increased, and a lower value if the heater is not commanded ON. |
| HO2S Heater Command Bank 1 - 2 Sensor 1 - 2 | — | On/Off | This parameter displays the commanded state of the Bank 1 Sensor 2 heater by the control module. The scan tool will display ON if the heater is commanded on. |
| HO2S Heater Control Circuit High Voltage Test Status Bank 1 - 2 Sensor 1 - 2 | — | OK | This parameter displays the state of the HO2S heater control circuit. The parameter displays Malfunction if the HO2S heater control circuit is shorted to voltage. |
| HO2S Heater Control Circuit Low Voltage Test Status Bank 1 - 2 Sensor 1 - 2 | — | OK | This parameter displays the state of the HO2S heater control circuit. The parameter displays Malfunction if the HO2S heater control circuit is shorted to ground. |
| HO2S Heater Control Circuit Open Test Status Bank 1 - 2 Sensor 1 - 2 | — | OK | This parameter displays the state of the HO2S heater control circuit. The parameter displays Malfunction if the HO2S heater control circuit is shorted to open. |
| HO2S Heater Monitor Complete | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| HO2S Heater Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| HO2S Heater Monitor Enabled | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| HO2S Heater Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the enable and completion status during the current driving / monitoring cycle of each continuous legislated emission related monitor and non-continuous legislated emission related monitor. |
| IAT Sensor | — | Varies °C/°F | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| Ignition Accessory Signal | — | On | This parameter displays the state of the ignition 0 input to the control module from the ignition switch. The scan tool will display ON when the ignition switch is in the ignition accessory position. The scan tool will display OFF when the ignition switch is in any other position. |
| Ignition Coil 1 - 8 Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the ignition coil control circuit voltage. The parameter displays Malfunction if the ignition coil control circuit voltage is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Ignition Coil 1 - 8 Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the ignition coil control circuit voltage. The parameter displays Malfunction if the ignition coil control circuit voltage is shorted to ground. |
| Ignition Coil 1 - 8 Control Circuit Open Test Status | — | OK | This parameter displays the state of the ignition coil control circuit voltage. The parameter displays Malfunction if the ignition coil control circuit voltage is open. |
| Ignition Coil Supply Voltage Bank 1 - 2 | — | On/Off | This parameter displays indicates that the feedback hardwire input to the controller for the ignition module power supply is active on the bank containing cylinder 1 or 2. |
| Ignition Cycles Since Recommended Maximum Fuel Alcohol Content Exceeded | — | Counts | This parameter displays the number of ignitions cycles since the most recent time that the recommended ethanol concentration was exceeded. |
| Ignition Cycles with Malfunction Since 1st Malfunction | — | Counts | This parameter displays the number of ignition cycles with a failure reported since the first ignition cycle with a failure reported. |
| Ignition Cycles without Completed Test Since 1st Malfunction | — | Counts | This parameter displays the number of ignition cycles without a pass or a failure reported since the first ignition cycle with a failure reported. |
| Ignition Cycles without Malfunction Since Last Malfunction | — | Counts | This parameter displays the number of ignition cycles with a pass reported and no failures reported since the first ignition cycle with a failure reported. |
| Ignition Timing | — | ° | This parameter displays the final spark advance in terms of crankshaft angle. |
| Ignition 1 Signal | — | Battery Voltage | This parameter displays the voltage measured at the ignition 1 circuit of the control module. Voltage is applied to the control module when the ignition switch is in the ignition 1 position. The scan tool will display a low value when the voltage is low. The scan tool will display a high value, such as battery voltage, when the voltage is higher. |
| Immobilizer Auto Learn Counter | — | Counts | The scan tool displays the count value when using the 30-minute reprogramming procedure. Three 10-minute cycles, or three counts, are required to complete the 30-minute auto learn reprogramming procedure. |
| Immobilizer Automatic Learn Timer | — | hh:mm:ss | This parameter indicates that either the auto learn timer (used in the auto learn procedure to enable VTD password learning) or the seed and key timer (used in the seed and key procedure to enable VTD password learning) is active. |
| Immobilizer Automatic Learn Timer | — | Inactive | This parameter indicates that either the auto learn timer (used in the auto learn procedure to enable immobilizer password learning) or the seed and key timer (used in the seed and key procedure to enable immobilizer password learning) is active. |
| Immobilizer Fuel Disable | — | Inactive | This parameter indicates the immobilizer system has disabled fuel. |
| Immobilizer Fuel Disable Until Ignition Off | — | Inactive | The parameter indicates the immobilizer system has disabled fuel for the remainder of the ignition cycle. |
| Immobilizer Fuel Enable | — | Yes | This parameter indicates the immobilizer system has enabled fuel. |
| Immobilizer Password Learn | — | Yes/No | This parameter indicates that the security password has been learned. |
| Immobilizer Password Learn Scan Tool Delay | — | Active / Inactive | This parameter indicates that the security code has been accepted but the scan tool delay is active. |
| Immobilizer Security Code Accepted | — | Yes/No | This parameter indicates that the received immobilizer system security code is correct. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Immobilizer Security Code Function | — | Present / Not Present | This parameter indicates if the ECU supports the immobilizer security code strategy |
| Immobilizer Security Code Lockout | — | Active / Inactive | This parameter displays Active or Inactive. Security Code Lockout Active indicates that the security code has not passed and lockout is active. |
| Immobilizer Security Code Lockout Active Timer | — | ms | This parameter displays the time elapsed since the immobilizer security code lockout has been activated either due to a battery disconnect or an incorrect immobilizer security code being entered. |
| Immobilizer Security Code Programmed | — | Yes/No | This parameter indicates if the immobilizer system security code has been programmed. |
| Immobilizer Security Code Programming Counter | — | Counts | This parameter displays the number of times a new immobilizer security code has been programmed through secure access. |
| Immobilizer Security Code Reset Counter | — | Counts | This parameter displays the number of times the immobilizer security code has been reset to the default value through secure access. |
| Immobilizer System Status | — | Varies | This parameter displays the current state of the immobilizer algorithm. |
| Immobilizer Valid Response Received Time | — | ms | This parameter displays the actual time observed for a valid immobilizer response. |
| Initialized Fuel Alcohol Content | — | % | This parameter displays the initialized fuel composition to be used as a starting point for the fuel composition algorithm. |
| Injector Duty Cycle Bank 1 or 2 | — | ms | This parameter displays the fuel injector pulse width (on-time) commanded to each cylinder on bank 1 or 2. |
| Inspection/Maintenance Drive Cycle Complete | — | Yes/No | This parameter displays that all required components of the standard drive cycle have completed. |
| Inspection/Maintenance Drive Cycle Idle Time Complete | — | Yes/No | This parameter displays that the internal combustion engine (ICE) idle time requirement is complete. |
| Inspection/Maintenance Drive Cycle Idle Timer | — | hh:mm:ss | This parameter displays the accumulated amount of contiguous time after the first internal combustion engine (ICE) start in which both pedal position and vehicle speed are zero. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete | — | Yes/No | This parameter displays that the vehicle propulsion system has been active for the required amount of time. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Time Complete | — | Yes/No | This parameter displays that the vehicle speed or load has been above a calibratable threshold for five minutes. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Timer | — | hh:mm:ss | This parameter displays the total accumulated time in which the vehicle speed has been > 25 mph or the load has been above a calibratable threshold after the 1st time the internal combustion engine (ICE) is started each key on. |
| Intake Air Humidity Sensor | — | % | This parameter displays the raw duty cycle signal from the relative humidity sensor electronics, which represents the relative humidity of the intake air. |
| Intake Camshaft Position | — | ° | This parameter displays the position of the intake camshaft for bank 1 in terms of degrees of camshaft rotation (advance) from the park position (a value of zero represents the park position). |
| Intake Camshaft Position Active Counter | — | Counts | This parameter displays a rolling count of the number of intake cam position sensor pulses for bank 1. |
| Intake Camshaft Position Actuator Solenoid Valve Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the camshaft position actuator solenoid control circuit voltage. The parameter displays Malfunction if the camshaft position actuator solenoid control circuit voltage is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Intake Camshaft Position Actuator Solenoid Valve Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the camshaft position actuator solenoid control circuit voltage. The parameter displays Malfunction if the camshaft position actuator solenoid control circuit voltage is shorted to ground. |
| Intake Camshaft Position Actuator Solenoid Valve Control Circuit Open Test Status | — | OK | This parameter displays the state of the camshaft position actuator solenoid control circuit voltage. The parameter displays Malfunction if the camshaft position actuator solenoid control circuit voltage is open. |
| Intake Camshaft Position Command | — | % | This parameter displays the commanded duty cycle for the intake cam phase output for bank 1. |
| Intake Camshaft Position Variance | — | ° | This parameter displays the absolute difference between the desired and actual positions of the intake camshaft for bank 1 in terms of degrees of camshaft rotation. |
| Intake Manifold Pressure | — | 70–75 kPa / 10–11 PSI | This parameter displays the pressure difference between the MAP and the barometric pressure (BARO) as calculated by the control module. The scan tool will display a higher value during high vacuum conditions, such as idle or deceleration. The scan tool will display a lower value during low vacuum conditions, such as wide open throttle or low load cruising. |
| Knock Retard | — | ° | This parameter indicates the amount of spark advance the control module removes from the ignition control (IC) spark advance in response to the signal from the knock sensors. The scan tool displays a high value for a large amount of spark retard, and a low value for a small amount of spark retard. |
| Long Term Fuel Trim Bank 1 or Bank 2 | — | 0% ± 10% | This parameter is calculated by the control module based on the Short Term FT value. The Long Term FT bank 1 is used for the long term correction of the fuel delivery in bank or bank 2. The scan tool will a high value for a large amount of long term fuel correction, and 0 percent for no long term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event. |
| Long Term Fuel Trim Average Bank 1 or Bank 2 | — | 1% | This parameter is calculated by the control module based on an intrusive test by the control module. The Long Term FT test average used for the long term correction of the fuel delivery in each bank. The scan tool will a high value for a large amount of long term fuel correction, and 0 percent for no long term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event. |
| Long Term Fuel Trim Average Bank 1 or Bank 2 without Purge | — | % | This parameter is calculated by the control module based on the Short Term FT value. The Long Term FT bank 1 is used for the long term correction of the fuel delivery in bank 1. The scan tool will display a high value for a large amount of long term fuel correction, and 0 percent for no long term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Long Term Fuel Trim Test Average Bank 1 | — | % | This parameter displays the filtered long term closed loop fuel correction for bank 1 (accumulated while the excess purge vapor test is inhibited), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing or failing or if an excess purge vapor test should be executed. |
| Long Term Fuel Trim Test Average Bank 2 | — | % | This parameter displays the filtered long term closed loop fuel correction for bank 2 (accumulated while the excess purge vapor test is inhibited), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing or failing or if an excess purge vapor test should be executed. |
| Long Term Fuel Trim Test Average without Purge Bank 1 | — | % | This parameter displays the filtered non purge long term closed loop fuel correction for bank 1 (accumulated while purge is off), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing, failing, or indeterminate during normal purge-off operation as well as during the intrusive excess purge vapor test. |
| Long Term Fuel Trim Test Average without Purge Bank 2 | — | % | This parameter displays the filtered non purge long term closed loop fuel correction for bank 2 (accumulated while purge is off), which is filtered using a first-order lag filter, also known as an exponentially weighted moving average (EWMA). This value is compared to thresholds to determine if the fuel adjustment system diagnostic is passing, failing, or indeterminate during normal purge-off operation as well as during the intrusive excess purge vapor test. |
| Low Engine Oil Level Indicator Command | — | On/Off | This parameter displays that the low engine oil level indication is being requested on over serial communication in order to inform the driver of a low engine oil level condition. |
| Low Engine Oil Pressure Indicator Command | — | On/Off | This parameter displays that the change engine oil indication is being requested on over serial communication in order to inform the driver that the engine oil needs to be changed. This signal is based upon either the engine oil life algorithm or the engine oil condition sensor. |
| MAF Performance Test | — | OK | This parameter displays the status of the mass air flow (MAF) performance test by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test. |
| MAF Sensor | Engine Idling | 3.4–6.5 g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds. |
| MAF Sensor | — | 1510–3224 Hz | This parameter indicates the frequency signal received from the MAF sensor by the control module. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds. |
| MAF Sensor Supply Voltage Command | — | On/Off | This parameter displays the commanded state of the mass air flow sensor supply voltage output. |
| MAF Sensor Supply Voltage Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the mass air flow supply voltage control circuit. The parameter displays Malfunction if the mass air flow supply voltage control circuit is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| MAF Sensor Supply Voltage Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the mass air flow supply voltage control circuit. The parameter displays Malfunction if the mass air flow supply voltage control circuit is shorted to ground. |
| MAF Sensor Supply Voltage Control Circuit Open Test Status | — | OK | This parameter displays the state of the mass air flow supply voltage control circuit. The parameter displays Malfunction if the mass air flow supply voltage control circuit is open. |
| MAF When Engine Overspeed Detected | — | g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor at the time an overspeed was detected. |
| MAP Performance Test 1 | — | OK | This parameter displays the status of the MAP performance test 1 by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test. |
| MAP Performance Test 2 | — | OK | This parameter displays the status of the MAP performance test 2 by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test. |
| MAP Sensor | — | 30–38 kPa / 4–6 PSI | This parameter indicates the manifold absolute pressure inside the engine as calculated by the control module based on the signal from the MAP sensor. The scan tool will display a higher value wide open throttle, and a lower value at idle. |
| MAP Sensor | — | 0.75–1.40 Volts | This parameter indicates the voltage signal received by the control module from the MAP sensor. The scan tool displays a low voltage at idle, and a high voltage at wide open throttle. Barometric pressure and altitude can effect these values. |
| Maximum Engine Speed When Engine Overspeed Detected | — | RPM | This parameter displays the engine peak speed when the overspeed condition was observed. |
| Malfunction Indicator Lamp (MIL) Command | — | Off | This parameter displays the commanded state of the MIL control circuit. The MIL should be ON when the scan tool indicates the MIL Command is ON. The malfunction indicator lamp should be OFF when the scan tool indicates the MIL Command is OFF. The control module will command the MIL ON when the ignition is ON with the engine OFF in order to perform a bulb check. |
| MIL Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the malfunction indicator lamp voltage control circuit. The parameter displays Malfunction if the malfunction indicator lamp voltage control circuit is shorted to voltage. |
| MIL Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the malfunction indicator lamp voltage control circuit. The parameter displays Malfunction if the malfunction indicator lamp voltage control circuit is shorted to ground. |
| MIL Control Circuit Open Test Status | — | OK | This parameter displays the state of the malfunction indicator lamp voltage control circuit. The parameter displays Malfunction if the malfunction indicator lamp voltage control circuit is open. |
| MIL Requested | — | Yes/No | This parameter displays the commanded state of the malfunction indicator lamp (MIL) output. |
| MIL Requested by DTC | — | No | This parameter indicates the reason the control module illuminated the MIL. The scan tool will display YES when the MIL is requested as a result of an A or B type DTC. The scan tool will display NO if the MIL is illuminated for another reason, such as transmission DTCs. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Misfire Diagnostic Engine Load | — | % | This parameter displays the engine load used within the misfire diagnostic (calculated as the ratio of the mass of air predicted to be in the cylinder two firing events into the future to the maximum possible mass of air in the cylinder based on the current ambient air pressure and charge temperature). |
| Misfire Diagnostic Engine Speed | — | RPM | This parameter displays the engine speed used within the misfire diagnostic. This engine speed is the maximum engine speed observed over the previous engine cycle. |
| Misfire Monitor Complete | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| Misfire Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| Misfire Monitor Enabled | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| Misfire Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| O2S/HO2S Monitor Complete | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| O2S/HO2S Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| O2S/HO2S Monitor Enabled | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| O2S/HO2S Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the status of the catalyst monitor diagnostic. Multiple tests may run before the diagnostic reports a Pass or Fail. When a determination has been made, the diagnostic is complete for the current trip and will not attempt any further tests. |
| Oil Level Warning Counter City | — | Counts | This parameter displays a rolling count of oil level debounce events for the city calibration. |
| Oil Level Warning Counter Country Road | — | Counts | This parameter displays a rolling count of oil level debounce events for the country road calibration. |
| Oil Level Warning Counter Highway | — | Counts | This parameter displays a rolling count of oil level debounce events for the highway calibration. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Output Shaft Speed Sensor | — | 0.00 RPM | This parameter displays the transmission output speed measured by the transmission output speed (TOS) sensor. |
| Park/Neutral Position Switch | — | Park | This parameter indicates the range selection of the automatic transmission as calculated by the control module based on input from the PNP switch. The scan tool will display, In Gear, Park, or Neutral depending on the PNP switch position. |
| Power Enrichment | — | Inactive | This parameter indicates if the control module has detected conditions appropriate to operate in Power Enrichment mode. The scan tool will display Active if the mode is in operation, and Inactive if the mode is not in operation. The control module enters Open Loop operation and increases injector pulse width when in power enrichment mode. |
| Power Mode | — | Off/ Accessory/Run/ Crank | This parameter displays the state of the system power mode.  This signal is based upon the state of the system power mode received over serial communication from the platform electronics. |
| Recommended Maximum Fuel Alcohol Content Exceeded | — | No | This parameter displays that the fuel alcohol percentage has exceeded the recommended value for vehicle conditions. |
| Recommended Maximum Fuel Alcohol Content When Recommended Maximum Fuel Alcohol Content Exceeded | — | % | This parameter displays the recommended fuel alcohol percentage for vehicle conditions at the most recent time that the recommended ethanol concentration was exceeded. |
| Reduced Engine Power | — | Inactive | This parameter indicates if the control module has detected that a TAC system Malfunction has occurred. The scan tool will display Active if the mode is in operation, and Inactive if the mode is not in operation. The control module limits engine power when this mode is Active. |
| Reduced Engine Power History | — | Varies | This parameter displays the last reason that powertrain has illuminated the Reduced Engine Power (REP) indication. |
| Refueling Events Since Recommended Maximum Fuel Alcohol Content Exceeded | — | Counts | This parameter displays the number of times the vehicle has been refueled since the most recent time that the recommended ethanol concentration was exceeded. |
| Remaining Fuel in Tank | — | % | This parameter displays the total fuel level as a percentage of the rated capacity of the fuel tank(s). |
| Remaining Fuel in Tank | — | Liters | This parameter displays the total fuel volume contained in the fuel tank(s). |
| Remote Vehicle Start Disable History 1–8 | — | Varies | This parameter displays one of the last eight reasons that powertrain has disabled remote vehicle start (RVS). |
| Remote Vehicle Start Request Signal | — | Off | This parameter displays the state of the remote vehicle start request signal.  The scan tool displays ON when a remote start signal is requested. |
| Reverse Inhibit Solenoid Actuator Command | — | Allowed/Inhibit | Reverse Inhibit Active indicates that the driver is inhibited from shifting into reverse. |
| Reverse Inhibit Solenoid Actuator Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is shorted to voltage. |
| Reverse Inhibit Solenoid Actuator Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is shorted to ground. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reverse Inhibit Solenoid Actuator Control Circuit Open Test Status | — | OK | This parameter displays the state of the reverse inhibit solenoid actuator control circuit. The parameter displays Malfunction if the reverse inhibit solenoid actuator control circuit is open. |
| Secondary Air Injection Monitor Complete | — | Yes | This parameter displays the status of the secondary air injection monitor. The parameter will display Yes when the secondary air injection monitor is complete. |
| Secondary Air Injection Monitor Enabled | — | Yes | The scan tool displays Yes when the secondary air injection monitor is enabled. If the scan tool displays No, this could indicate a malfunction in the secondary air injection monitor circuit. |
| Short Term Fuel Trim Bank 1 or Bank 2 | — | 0% ± 10% | This parameter displays the short term correction to fuel delivery for bank 1 or bank 2 by the control module in response to the amount of time the oxygen sensor voltage spends above or below the 450 mV threshold. The scan tool will display 0 percent if no adjustments are required. The scan tool will display a higher positive value if fuel has to be added, and a higher negative value if fuel has to be removed. |
| Skip Shift Indicator Command | — | Off | This parameter indicates that the transmission skip shift indicator is being requested On over serial communication in order to inform the driver that shifting up to one of the next highest hears is inhibited. |
| Skip Shift Solenoid Actuator Command | — | Disabled | This parameter indicates that the skip shift solenoid is commanded On, inhibiting the driver from shifting up to one of the next highest gears. |
| Skip Shift Solenoid Actuator Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to voltage. |
| Skip Shift Solenoid Actuator Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is shorted to ground. |
| Skip Shift Solenoid Actuator Control Circuit Open Test Status | — | OK | This parameter displays the state of the skip shift solenoid actuator control circuit. The parameter displays Malfunction if the skip shift solenoid actuator control circuit is open. |
| Specific Humidity | — | % | This parameter displays the ratio of water vapor to dry air shown in a percentage. |
| Short Term Fuel Trim Test Average Bank 1 or Bank 2 | — | 3% | This parameter is calculated by the control module based on an intrusive test by the control module. The Short Term FT Test Average used for the short term correction of the fuel delivery in each bank. The scan tool will display a high value for a large amount of short term fuel correction, and 0% for no short term fuel trim correction. The scan tool will display a negative value when fuel system is running too rich and fuel is being removed from the combustion event. The scan tool will display a positive value if the fuel system is running lean and fuel is being added to the combustion event. |
| Start Up ECT | — | Varies °C/°F | This parameter Indicates the engine coolant temperature at engine start up as calculated by the control module based on the signal from the ECT sensor. The scan tool will display a higher value on a warmer engine, and a lower value on a colder engine. |
| Start Up IAT | — | Varies °C/°F | This parameter Indicates the intake air temperature at engine start up as calculated by the control module based on the signal from the IAT sensor. The scan tool will display a higher value during warmer under hood temperatures, and a lower value during colder under hood temperatures. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Starter Relay Command | — | Off | This parameter displays the current starter relay command. The scan tool displays ON when the starter relay is commanded on. |
| Starter Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to voltage. |
| Starter Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to ground. |
| Starter Relay Control Circuit Open Test Status | — | OK | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to open. |
| TAC Forced Engine Shutdown | — | No | This parameter indicates the status of TAC control by the control module. The scan tool will display YES if the engine has been shut down due to a throttle control Malfunction. The scan tool will display NO if the engine has not been shut down by a throttle control Malfunction. |
| TAC Motor | — | Enabled | This parameter indicates the status of the TAC motor driver by the ECM. The scan tool will display Enabled if TAC motor operation is allowed. The scan tool will display disabled if the TAC motor is disabled. |
| TAC Motor Command | — | 15–25% | This parameter indicates the required duty cycle to maintain a desired throttle position. The scan tool will display a higher value if more effort is required to move the throttle to the desired position, such as physical resistance. The scan tool will display a lower value if less effort is required to move the throttle to the desired position. |
| TCC/Cruise Control Brake Pedal Switch | — | Applied / Released | This parameter displays the status of the brake pedal system |
| Throttle Body Idle Air Flow Compensation | — | % | This parameter displays the percent compensation of the learned airflow variation algorithm. This value indicates the current amount of airflow compensation in response to engine intake airflow restrictions. |
| Throttle Position | — | % | This displays the throttle position resulting directly from the arbitration of the (corrected) throttle position sensors. |
| Throttle Position Performance Test | — | OK | This parameter displays the status of the Throttle Position performance test by the control module. The scan tool will display OK if no Malfunction is found. The scan tool will display Malfunction if the control module detects a Malfunction during the test. |
| Throttle Position Sensor 1 | — | 4.1–4.5 Volts | This parameter displays the voltage signal sent to the control module from Throttle Position sensor 1 of the throttle assembly. The Throttle Position sensor 1 is a range of values indicating a high voltage when the throttle is closed to a low voltage when the throttle plate is fully open. |
| Throttle Position Sensor 1 Position | — | 8% | This parameter displays the angle of the throttle position (Throttle Position) sensor 1 as calculated by the control module using the signal from the Throttle Position sensor 1. The Throttle Position sensor 1 is a range of values indicating a low percentage when the throttle is closed to a high percentage when the throttle is fully open. |
| Throttle Position Sensor 1 Learned Minimum | — | 0-0.6 Volts | This parameter displays the learned minimum value of throttle position (Throttle Position) sensor 1 as recorded by the control module during the last learn procedure. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Throttle Position Sensor 2 | — | 0.5–0.8 Volts | This parameter displays the voltage signal sent to the control module from Throttle Position sensor 2 of the throttle assembly. The Throttle Position sensor 2 is a range of values indicating a low voltage when the throttle is closed to a high voltage when the throttle plate is fully open. |
| Throttle Position Sensor 2 Position | — | 4% | This parameter displays the angle of the Throttle Position sensor 2 as calculated by the control module using the signal from the Throttle Position sensor 2. The Throttle Position sensor 2 is a range of values indicating a low percentage when the throttle is closed to a high percentage when the throttle is fully open. |
| Throttle Position Sensor 2 Learned Minimum | — | 5.0-3.7 Volts | This parameter displays the learned minimum value of throttle position (Throttle Position) sensor 2 as recorded by the control module during the last learn procedure. |
| Throttle Position Sensors 1 and 2 | — | Agree | This parameter displays the results of a control module test that compares the signals from the Throttle Position sensors 1 and 2 . The scan tool will display Agree or Disagree. Agree indicates that Throttle Position sensor 1 and Throttle Position sensor 2 voltages correspond to the same throttle position. Disagree indicates that Throttle Position sensor 1 and Throttle Position sensor 2 voltages correspond to different throttle positions. |
| Tire Size | — | Rev/km | This parameter displays the vehicle tire circumference in centimeters. |
| Torque Delivered Signal | — | Varies lbs ft N•m | This parameter displays the PWM signal which indicates the percent of available torque the engine is delivering to the drive wheels. The EBTCM monitors the Traction Control Torque signal to ensure that the PCM is responding properly to the Traction Control Desired Torque signal. |
| Torque Management Ignition Timing Retard | — | 0° | This parameter indicates how much the ignition spark timing is being retarded to control torque by the control module. The scan tool will display a higher value under extreme torque control conditions such as spinning wheels. The scan tool will display a lower value under low torque control conditions such as light driving. |
| Torque Management Spark Retard | — | 0° | This parameter indicates how much the ignition spark timing is being retarded to control torque by the control module. The scan tool will display a higher value under extreme torque control conditions such as spinning wheels. The scan tool will display a lower value under low torque control conditions such as light driving. |
| Torque Request Inhibit Fuel | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |
| Torque Request Inhibit - Ignition Timing | — | No | This parameter indicates if the transmission torque request is limited due to ignition timing. |
| Torque Request Inhibit Minimum Idle Inhibit | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |
| Torque Request Inhibit Minimum Torque | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |
| Torque Request Inhibit Spark | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |
| Torque Request Inhibit Spark Advance | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Torque Request Inhibit TAC | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |
| Torque Request Inhibit TAC Limit | — | No | This parameter displays the reason the ECM would be causing the transmission torque request to be limited, and if the condition is currently present. |
| Total Engine Overspeed Time | — | ms | This parameter displays the total duration of the engine overspeed time in milliseconds. |
| Total Knock Retard | — | 0° | This parameter indicates how much ignition spark timing is being retarded due to all control systems monitored by the control module. The scan tool will display a high value during extreme conditions such as high temperatures and antilock braking. The scan tool will display a lower value during lighter driving conditions. |
| Total Misfire | — | 0 | This parameter displays the number of possible misfires during the last 200 cylinder firing events detected on all cylinders as calculated by the control module. The misfires are calculated based on engine crankshaft rotation speed variations. The scan tool displays an incrementing counter. |
| Traction Control Status | — | Inactive | This parameter displays when the traction control system (TCS) is activated. |
| Transfer Case Gear Ratio (If Equipped) | — | 1 | This parameter displays the estimated transfer case ratio for applications that are equipped with a transfer case capable of providing range selection (e.g., four wheel drive low). |
| Transfer Case OSS | — | RPM | This parameter displays the transfer case output speed (the speed at the output of the transfer case) determined from the speed measured by the transfer case speed sensor (TCSS). |
| Upshift Indicator Command | — | Off | This parameter indicates that the transmission upshift indication is being requested On over serial communication in order to recommend that the driver shift up to a higher gear to improve fuel economy. |
| Vehicle Speed Output Circuit 2 High Voltage Test Status | — | OK | This parameter displays the state of the vehicle speed output circuit 2. The parameter displays Malfunction if the vehicle speed output circuit 2 is shorted to voltage. |
| Vehicle Speed Output Circuit 2 Low Voltage Test Status | — | OK | This parameter displays the state of the vehicle speed output circuit 2. The parameter displays Malfunction if the vehicle speed output circuit 2 is shorted to ground. |
| Vehicle Speed Output Circuit 2 Open Test Status | — | OK | This parameter displays the state of the vehicle speed output circuit 2. The parameter displays Malfunction if the vehicle speed output circuit 2 is open. |
| Vehicle Speed Sensor | — | 0 km/h / MPH | This parameter indicates the vehicle speed as calculated by the control module based on a signal from the vehicle speed sensor (VSS). The scan tool will display a higher value at higher vehicle speeds, and a lower value at lower vehicle speeds. |
| Vehicle Speed When Engine Overspeed Detected | — | km/h / MPH | This parameter displays the peak engine speed observed during all overspeed conditions. |
| VIN Programming Counter | — | Counts | This parameter displays the number of times the VIN has been programmed. |
| Warm-ups Since DTC Cleared | — | # | This parameter indicates the number of warm up cycles that have occurred Since DTCs were cleared. The scan tool will display a higher counts as more warm up cycles have occurred since the DTCs were cleared. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Warm-ups Without Emission Malfunctions | — | # | This parameter indicates the number of warm up cycles that have occurred without an emission Malfunction present. The scan tool will display a 0 if a Malfunction has occurred. The scan tool will display a higher count if a number of warm up cycles have occurred without an emission Malfunction. |
| Warm-ups Without Non-Emission Malfunctions | — | # | This parameter indicates the number of warm up cycles that have occurred without a non-emission Malfunction present. The scan tool will display a 0 if a Malfunction has occurred. The scan tool will display a higher count if a number of warm up cycles have occurred without a non-emission Malfunction. |
| Wide Open Throttle | — | No | This parameter indicates the throttle status commanded by the control module. The scan tool will display YES if the vehicle throttle is commanded to wide open. The scan tool will display NO if the vehicle throttle is commanded to an amount less than 100%. |

## Output Control

| Parameter | Description |
|---|---|
| This is a comprehensive list. Not all output controls listed are available for all applications. | |
| A/C Compressor Clutch Relay | This device control is used to override the state of the air conditioning compressor output. |
| A/C Relay | The engine must be running and the ECM must receive an A/C request from the HVAC control module in order to enable the output control. The ECM de-energizes the A/C compressor clutch relay when you select OFF. The relay remains de-energized until you select ON. |
| Ambient Air Temperature Reset | This device control resets the environmental temperature (ENVT) model. This device control is to be used to force the ENVT model to update for service of different monitors. |
| Brake Pedal Position Sensor Learn | This device control is used to reset the brake pedal fully released learned position to its initialized value after a brake system repair. |
| CAC Coolant Pump | This function activates the charge air cooler (CAC) coolant pump relay. The normal commanded state is OFF. When commanded ON or OFF, the engine control module (ECM) turns the relay ON or OFF. The system remains in the commanded state until cancelled by the scan tool. |
| Clutch Pedal Position Learn | This device control is used to trigger the procedure to learn the clutch pedal fully applied position. |
| Cooling Fan Relay 1, Relays 2 and 3, Relays 1, 2 and 3 | This device control is used to override the state of the cooling fan control output. |
| Crankshaft Position Reluctor Wheel Learn | This device control is used to reset the crank wheel adaptation values in case of an ECM or crank wheel replacement. |
| Crankshaft Position Variation Learn | This device control is used to activate the crankshaft position variation learn algorithm which calculates the reference pulse correction factors for the misfire diagnostic. |
| Cylinder 1, 3, 4, 6, 7 | This device control is used to deactivate one of the engine’s cylinders with the engine running by commanding the appropriate displacement on demand solenoid output on. |
| Cylinder Deactivation System | This device control is used to deactivate half of the engine’s cylinders by commanding all of the displacement on demand solenoid outputs on. |
| Cylinder Power Balance | This device control is used to override the state of the fuel injector outputs. This device control is used to disable injectors in order to cut off fuel to the associated cylinders. |
| Depressurize Fuel System | When the low pressure fuel pump is used in conjunction with a separate high pressure fuel pump for direct injection (DI) engines, this device control can be used to reduce the high fuel pressure to a low working level. |
| Engine Controls Ignition Relay | This device control is used to override the state of the powertrain relay. |
| Engine Oil Life Reset | This device control may be used to reset the engine oil remaining life to 100% after an oil change or to any other value when replacing a control module. |

| Parameter | Description |
|---|---|
| Engine Oil Pressure Control Solenoid Valve | This device control is used to override the state of the variable displacement oil pump. When the variable displacement oil pump is turned on, the oil pump will be commanded to a low pressure state. |
| Engine Serial Number | This device control displays the engine serial number. |
| Engine Speed | This device control is used to override the idle engine speed. |
| Engine Speed Control | Activates the idle air control (IAC) valve to change engine RPM. The normal commanded state is NONE. To enable the RPM control, all instruction on the scan tool must be completed. The system will Increase or Decrease the engine speed. The SET STEP VALUE changes the engine speed by increments of 25 RPM, 100 RPM, and 500 RPM. The system remains in the commanded state until cancelled by the tool. |
| EVAP Purge/Seal | This control enables 2 functions. One function increases or decreases the amount of purge by changing the duty cycle of the purge valve and commanding the vent ON (non-venting). The normal commanded state of both valves is NONE. The system will Increase or Decrease the amount of EVAP purge valve opening by 10 percent increments within a range of 0–100 percent. The second function seals the system after using the purge function to obtain a specific amount of fuel tank pressure (FTP). When activated the purge valve is commanded to 0 percent and the vent valve is commanded ON (non-venting). Both functions remain in the commanded state until cancelled by the tool or the FTP exceeds 24 mm Hg (12 in H2O). |
| EVAP Purge Solenoid | Activates the EVAP Purge Valve. The normal commanded state is OFF. The system will Increase or Decrease the amount of EVAP purge valve opening by 10 percent increments within a range of 0–100 percent. The system remains in the commanded state until cancelled by the tool or the fuel tank pressure exceeds 24 mm Hg (12 in H2O). |
| EVAP Purge Solenoid Valve | This device control is used to verify functionality of the fuel vapor purge system by allowing the canister purge output to be commanded to a specific duty cycle. |
| EVAP Service Test | Activates the on-board EVAP diagnostic test. |
| EVAP Test | This device control is used to activate the evaporative emissions service bay test. |
| EVAP Vent Solenoid | Activates the EVAP vent solenoid. The normal commanded state is OFF. When commanded ON, the vent valve switches to non-venting. The system remains in the commanded state unless one of the following conditions occurs:<br>• Cancelled by the tool<br>• Purge is greater than 0 percent, and the fuel tank pressure exceeds 24 mm Hg (12 in H2O). |
| EVAP Vent Solenoid Valve | This device control is used to either open or close the canister vent. |
| Fuel Composition Reset | This device control is used to reset the learned ethanol content of the fuel to a default calibration value. |
| Fuel Control Loop Status | This device control is used to enable or disable closed loop fuel. |
| Fuel Injector Balance | This device control is used to override the state of the fuel injector outputs. This device control is used to trigger a single injector to be commanded on for a short duration in order to test the flow of the injector to the associated cylinders. |
| Fuel Pump Enable | This device control is used to override the state of the fuel pump output discrete hardwire between the ECM and the fuel pump control module (FPCM) or the fuel pump driver module. |
| Fuel Pump Relay | Controls the fuel pump relay. The normal commanded state is NONE. When commanded ON/OFF, the PCM turns the fuel pump ON/OFF. If the engine is running, and the fuel pump is commanded OFF, the engine will stall. The system remains in the commanded state until cancelled by the scan tool. |
| Fuel Pump Speed | This device control is used to override the normal control of the fuel pump output. The device control is a service diagnostic aid that is used to determine if the fuel pump system is functioning properly. |
| Fuel Rail Pressure Relief Valve Reset | This device control is used to trigger a reset of the learned offset value for the high pressure fuel pump relief valve. |
| Fuel System Pressure Test | This device control is used to charge the fuel rail on a high pressure direct injection system before completing the assembly of the engine in order to check for fuel leaks. This feature will allow the technician to inspect the fuel system for leaks after servicing the fuel system or after any other service procedure that required disconnection or removal of fuel system components. The starter relay is commanded on to crank the engine. Spark (SIDI) and fuel injection are inhibited to prevent the engine from starting. The high pressure fuel pump/regulator(s) are controlled to ensure maximum fuel system pressure is achieved while the engine is cranking and fuel pressure maintained after the engine stops rotating. |

| Parameter | Description |
|---|---|
| Fuel System Reset | This device control is used to trigger a reset of the fuel set-point adaptation (FSA) learning adaptive map. |
| Fuel Trim Enable | This device control is used to enable or disable fuel trim learning. |
| Fuel Trim Reset | This device control is used to reset the learned fuel trim values to their initial values. |
| Generator L-Terminal | This device control is used to override the state of the generator L terminal output. |
| High Pressure Fuel Pump Learn | This device control is used to start (trigger) and run the high fuel pressure learn process in order to fine tune the high pressure fuel pump after a high pressure component replacement. |
| HO2S Heater Bank 1 or 2 Sensor 1 or 2 | This device control is used to override the duty cycle of the oxygen sensor heaters. |
| HO2S Heater Bank 1 Sensor 1 Command | Activates the HO2S bank 1 sensor 1 heater. The commanded states include ON and OFF. The normal commanded state is OFF. Commanding the HO2S bank 1 sensor 1 heater ON turns on the heater driver. The system remains in the commanded state until cancelled by the tool. |
| HO2S Heater Bank 1 Sensor 2 Command | Activates the HO2S bank 1 sensor 2 heater. The commanded states include ON and OFF. The normal commanded state is OFF. Commanding the HO2S bank 1 sensor 2 heater ON turns on the heater driver. The system remains in the commanded state until cancelled by the tool. |
| HO2S Heater Bank 2 Sensor 1 Command | Activates the HO2S bank 2 sensor 1 heater. The commanded states include ON and OFF. The normal commanded state is OFF. Commanding the HO2S bank 2 sensor 1 heater ON turns on the heater driver. The system remains in the commanded state until cancelled by the tool. |
| HO2S Heater Learn | This device control is used to trigger a service bay procedure to learn the oxygen sensor heater resistance following a sensor replacement in service. |
| HO2S Reset | This device control is used to trigger a reset of the oxygen sensor drift compensation value, in case of an oxygen sensor replacement. |
| HO2S Test | This device control is used to trigger a service bay procedure to execute the oxygen sensor response test following a sensor replacement in service. |
| Idle Ignition Timing | This device control is used to disable the portion of the spark control algorithm that adjusts spark angle to correct the difference between commanded idle engine speed and actual idle engine speed. |
| Idle Learn | This device control is used to reset the learned airflow adaptive values to their initial values. |
| Ignition Timing Retard | This device control is used to retard the spark angle from the software calculated spark angle. For example, if the software calculated spark angle was 15 degrees advanced and this device control requested a 3 degree retard, the commanded spark angle that would be delivered would be 12 degrees advanced. |
| Intake Camshaft Position Actuator | This device control is used to override the state of the intake cam phase output. The commanded camshaft position is expressed in terms of degrees of camshaft rotation (advance for intake camshafts) from the park position (a camshaft position of zero represents the park position). |
| Intake Camshaft Position Actuator Solenoid Valve | This device control is used to override the state of the intake cam phase solenoid output. |
| MAF Sensor Supply Voltage | This device control is used to override the state of the mass air flow sensor supply voltage output. |
| Malfunction Indicator Lamp (MIL) | This device control is used to either turn the malfunction indicator lamp (MIL) on or off. |
| Misfire Graphic | Graphs the accumulated misfires occurring in each cylinder. The scan tool allows for a reset of the misfire graph. |
| Remote Vehicle Start Disable History Reset | This device control is used to trigger the reset of the last eight reasons that powertrain has disabled remote vehicle start (RVS). |
| Reverse Inhibit | This device control is used to override the state of the Reverse Inhibit output. |
| RVS Disable History Reset | This output control is used to trigger the reset of the last 8 reasons the ECM has disabled remote vehicle start (RVS). |
| Skip Shift Solenoid | Activates the Skip Shift Solenoid |
| Starter Relay | This device control is used to override the state of the starter relay output. Fuel and spark are disabled to prevent the engine from starting if the starter relay output is commanded on. |
| Throttle Position | This device control is used to override the commanded throttle position. |

| Parameter | Description |
|---|---|
| Throttle Sweep | This device control is used to automatically command the throttle blade from 0% to 100% and then back to 0% |
| Tire Size Selection | This function is used for correcting vehicle speed and odometer calculations when tire size is changed. |

## K20 Engine Control Module: Scan Tool Information

### Engine Control Module Scan Tool Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| This is a comprehensive list. Not all parameters listed are available for all applications.<br>**Base Operating Conditions:** Engine Idling/Radiator Hose Hot/Park or Neutral/Closed Loop/Accessories OFF | | | |
| Air Conditioning Compressor Clutch Command | -— | On / Off | This parameter displays the commanded state of the air conditioning (A/C) compressor output. |
| Air Conditioning Disable - Air Conditioning Pressure Out of Range | -— | Yes / No | This parameter indicates if the A/C compressor was disengaged due to pressure out of range. |
| Air Conditioning Disengage History 1-8 | -— | Varies | This parameter indicates the last 8 A/C disengage history reasons. |
| Air Conditioning High Side Pressure Sensor | Air Conditioning OFF | Varies | The scan tool displays 0–5 volts. The voltage applied to the ECM input for the A/C refrigerant pressure sensor. |
| | Air Conditioning ON | Varies | |
| Air Conditioning High Side Pressure Sensor | Air Conditioning OFF | Varies | The scan tool displays 0–3450 kPa (0–500 psi). The voltage applied to the ECM input from the A/C refrigerant pressure sensor is converted to a pressure value. |
| | Air Conditioning ON | Varies | |
| Air Conditioning Request Signal | A/C ON | Yes | The scan tool displays Yes/No. The HVAC module receives an input request when the HVAC module is turned On. |
| | A/C OFF | No | |
| Accelerator Pedal Position | Accelerator pedal not actuated | 0% | This parameter displays the angle of the accelerator pedal as calculated by the control module using the signals from the accelerator pedal position sensors. The accelerator pedal position (APP) indicated angle is a range of values indicating a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| | Accelerator pedal fully actuated | 100% | |
| Accelerator Pedal Position Sensor | Accelerator pedal not actuated | 0.7–1.2 Volts | This parameter displays the voltage signal sent to the control module from Accelerator Pedal Position Sensor of the assembly. A range of values indicating a low voltage when the accelerator pedal is not depressed to a high voltage when the accelerator pedal is fully depressed. |
| | Accelerator pedal fully actuated | 4.2–4.5 Volts | |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Accelerator Pedal Position Sensor and Sensor 2 | — | Agree | This parameter displays Disagree if the control module detects the signal voltage from the Accelerator Pedal Position Sensor is not in correct relationship to Accelerator Pedal Position Sensor 2. The scan tool displays Agree under the normal operating conditions. |
| Accelerator Pedal Position Sensor Circuit Status | — | Okay | Indicates the Accelerator Pedal Position Sensor circuit is currently out of range or that a Malfunction has been detected. |
| Accelerator Pedal Position Sensor Learned Released Position | — | Volts | This Parameter indicates the accelerator pedal position sensor signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the engine control module (ECM). |
| Accelerator Pedal Position Sensor Position | Accelerator pedal not actuated | 0.0% | This parameter displays the angle of the Accelerator Pedal Position Sensor as calculated by the control module Accelerator Pedal Position Sensor ranges from a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| | Accelerator pedal fully actuated | 100% | |
| Accelerator Pedal Position Sensor 2 Position | Accelerator pedal at rest position | 0.3–0.5 Volts | This parameter displays the angle of the Accelerator Pedal Position Sensor 2 as calculated by the control module Accelerator Pedal Position Sensor 2 ranges from a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| | Accelerator pedal at WOT | 2.0–2.5 Volts | |
| Accelerator Pedal Position Sensor 2 Circuit Status | — | Okay | Indicates that the sensed Accelerator Pedal Position Sensor 2 value is currently out of range or that a malfunction has been detected. |
| Accelerator Pedal Position Sensor 2 Learned Released Position | — | Volts | This Parameter indicates the Accelerator Pedal Position Sensor 2 signal at its minimum learned position (pedal released) as a percentage of its reference voltage. (The minimum learned position is automatically updated periodically as determined by the engine control module (ECM). |
| Accelerator Pedal Position Sensor 2 Position | Accelerator pedal at rest position | 0.0% | This parameter displays the angle of the Accelerator Pedal Position Sensor 2 as calculated by the control module. Indicates a low percentage when the accelerator pedal is not depressed to a high percentage when the accelerator pedal is fully depressed. |
| | Accelerator pedal at WOT | 100% | |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Accelerator Pedal Position Sensors | — | % | This Parameter contains the accelerator pedal position resulting directly from the settling of differences of the accelerator pedal position sensors (prior to any compensation to determine driver intent). |
| Ambient Air Temperature | — | Varies °C (°F) | Outside temperature expressed in degrees |
| Ambient Air Temperature Sensor | — | Varies °C (°F) | Ambient temperature expressed in degrees |
| Ambient Humidity | — | Varies % | Outside humidity expressed in a percentage. |
| Autostop Disable Reason - Particulate Filter Test in Progress | — | Yes / No | This parameter displays Yes if Autostop is disabled because a particulate filter test is in progress. |
| Average Distance Between Particulate Filter Regenerations | — | km/miles | This parameter contains the mean distance between particulate filter regenerations. |
| Average Reductant Consumption | — | g/km | This parameter displays the average reductant consumption in gallons per kilometer. |
| Average Particulate Filter Regeneration Duration | — | hh:mm:ss | This parameter contains the mean duration of the diesel particulate filter regenerations. The value in this parameter shall be updated after every diesel particulate filter regeneration attempt. |
| Average Particulate Filter Inlet Temperature During Regeneration | — | ºC (ºF) | This parameter contains the mean diesel particulate filter inlet temperature, during the diesel particulate filter regenerations. |
| Barometric Pressure Sensor | — | kPa (PSI)<br>Varies with altitude | This parameter displays the barometric pressure in kPa. |
| Barometric Pressure Sensor 2 | — | kPa (PSI)<br>Varies with altitude | This parameter displays the barometric pressure in volts. |
| Battery Voltage | Ignition ON | Volts | This parameter displays the battery voltage. |
| Boost System Monitor - This Ignition Cycle | — | Disabled, Enabled, Complete | The scan tool displays Enabled when the Boost System Monitor is enabled for this ignition cycle. |
| Boost System Monitor - Since Diagnostic Trouble Codes Cleared | — | Not Supported, Complete, Incomplete | The scan tool displays Complete when the Boost System Monitor is complete. |
| Brake Pedal Position Sensor | — | Volts | This parameter displays the brake pedal position sensor in volts. |
| Brake Pedal Position Sensor | — | % | This parameter displays the brake pedal position sensor in percentage applied. |
| Brake Pedal Position Sensor Fully Released Learn Status | — | Complete / Incomplete | This parameter displays the brake pedal release position learned status. |
| Brake Pedal Position Sensor Learned Released Position | — | Volts | This parameter displays the brake pedal learned released position in volts. |
| Brake Pedal Position Sensor Signal | Released | Applied / Released / Invalid | This parameter displays the status of the brake pedal as determined by the ECM. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Brake Pedal Position Switch Circuit Signal | Released | Applied / Released | This parameter displays the status of the brake pedal position circuit. |
| Calculated Nitrogen Oxides Catalytic Converter Efficiency Gross Error Test | — | % | This parameter displays the estimated average Selective Catalyst Reduction (SCR) efficiency for urea quality determination during the gross error test. |
| Calculated Nitrogen Oxides Catalytic Converter 2 Efficiency | — | % | This parameter displays the estimated average Selective Catalyst Reduction 2 (SCR2) efficiency. |
| Calculated Nitrogen Oxides Catalytic Converter 2 Efficiency During Particulate Filter Regeneration | — | Okay / Malfunction | This parameter displays the SCR2 efficiency monitor estimated average efficiency during particulate filter regeneration. |
| Calculated Nitrogen Oxides Emissions Monitor Efficiency | — | % | This parameter displays the estimated average nitrogen oxides emissions monitor efficiency. |
| Calculated Particulate Filter Flow Resistance | — | kPa / (liter/s) | This parameter displays the filtered flow resistance of the Diesel Particulate FIlter. |
| Calibration History Buffer | — | Locked / Unlocked | This parameter displays when the calibration buffer has been locked against further updates due to detection of a non-production calibration. |
| Calibration Verification Number History 1 – 10 | — | # | This parameter displays the history of calibration verification from 1–10. |
| Camshaft Position Signal Output Circuit High Test Status | Engine Idling | Okay | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to voltage. |
| Camshaft Position Signal Output Circuit Low Test Status | Engine Idling | Okay | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is shorted to ground. |
| Camshaft Position Signal Output Circuit Open Test Status | Engine Idling | Okay | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Camshaft Position Signal Output Circuit is open. |
| Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared | — | Not Supported / Complete / Incomplete | This parameter indicates the status of the catalyst monitor diagnostic. Monitor Test indicates Complete when the catalyst monitor diagnostic has been run since DTCs have been cleared. |
| Charge Air Cooler Temperature Sensor | — | ºC (ºF) | This parameter displays the charge air cooler temperature measured by a sensor located first in the charge air cooler stream. |
| Charge Air Cooler Temperature Sensor 2 | — | ºC (ºF) | This parameter displays the charge air cooler temperature measured by a sensor located first in the charge air cooler stream. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Charge Air Cooler Coolant Inlet Temperature Sensor | — | ºC (ºF) | This parameter contains the undefaulted charge air cooler temperature measured by a sensor located first in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system. |
| Control Module Voltage Signal | — | B+ | This parameter displays the voltage of the power input to the engine control module. Since battery voltage is not directly measured by engine control module, switched battery voltage from the Run/Crank input to the engine control module is displayed. |
| Cooling Fan Command | — | % | This parameter displays the cooling fan duty cycle. |
| Cooling Fan Speed | Ignition ON | Varies | This parameter displays the current state of the cooling fan speed. (For example OFF, Low, Medium, or High) rather than rotational speed. |
| Crank Request Signal | — | Yes | This parameter displays the state of the crank request input to the control module from the ignition switch. The scan tool will display Yes when the ignition switch is in the Crank position. The scan tool will display No when the ignition switch is in any other position. |
| Crankshaft Position Active Counter | — | Counts | This parameter displays an incrementing counter when the control module receives a signal from the crankshaft position sensor (CKP). |
| Crankshaft Position Sensor | Engine Idling | RPM | This parameter displays engine speed. |
| Crankshaft Position Signal Output Circuit High Test Status | Ignition ON | Okay | This parameter displays the state of the Crankshaft Position Signal Output Circuit. The parameter displays Malfunction if the Crankshaft Position Signal Output Circuit is shorted to voltage. |
| Crankshaft Position Signal Output Circuit Low Test Status | Ignition ON | Okay | This parameter displays the state of the Crankshaft Position Signal Output Circuit. The parameter displays Malfunction if the Crankshaft Position Signal Output Circuit is shorted to ground. |
| Crankshaft Position Signal Output Circuit Open Test Status | Ignition ON | Okay | This parameter displays the state of the Camshaft Position Signal Output Circuit. The parameter displays Malfunction if the Crankshaft Position Signal Output Circuit is open. |
| Crankshaft Position Variation Learn | Ignition ON | Learn In Progress / Learning Not Enabled | This parameter displays if the crank angle learned this key cycle. |
| Crankshaft Position Variation Learn Status | Ignition ON | Complete | This parameter displays the status of the crank angle sensing error (CASE) learn algorithm. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cruise Control | — | Enabled / Disabled | This parameter displays the status of the cruise control system as determined by the control module. The scan tool will display Enabled when the cruise control system is able to control vehicle speed. The scan tool will display Disabled when the cruise control system is not operating. |
| Cruise Control Cancel Switch | — | Inactive | This parameter displays the status of the cruise control cancel switch |
| Cruise Control Disengage History 1–8 | Cruise ON | Reason for Cruise Disengagement | These parameters indicate the last 8 reasons the ECM disengaged the cruise control. History 1 contains the most recent reason. |
| Cruise Control Inhibit Reason | — | None | The parameter displays the reason the cruise control system cannot engage. |
| Cruise Control On/Off Switch | — | Off | This parameter displays the state of the On/Off switch input to the control module . The scan tool will display On when the cruise On/Off switch is ON. The scan tool will display Off when the cruise ON/OFF switch is OFF. |
| Cruise Control Resume/ Accelerate Switch | — | Inactive | This parameter displays the state of the Resume/Accel switch input to the control module When the cruise control switch is in the On position and the Resume/Accel switch is activated, the scan tool displays On. When the Resume/Accel switch is released the scan tool displays Off. |
| Cruise Control Set/Coast Switch | — | Inactive | This parameter displays the state of the Set/Coast switch input to the control module from the cruise control system. When the cruise control switch is in the on position and the Set/Coast switch is activated, the scan tool displays Active. When the Set/Coast switch is released the scan tool displays Inactive. |
| Cruise Control Switch | — | Varies | This parameter displays the cruise control/speed limiter raw switch states. |
| Cylinder 1, 2, 3, 4, 5, or 6 Balancing Rate | — | Varies | These parameters display the adjustment in fuel volume for each cylinder as calculated by the control module. The scan tool will display a negative balancing rate if the fuel volume is lowered. The scan tool will display a positive balancing rate if the fuel volume is increased. |
| Cylinder 1, 2, 3, 4, 5, or 6 Current Misfire Counter | — | Counts | This parameter displays the number of misfires detected for cylinder's 1–6 within the current 100 engine cycle test interval. The set of misfire counters for the individual cylinders are maintained such that if a single misfire is detected over an engine cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Cylinder 1, 2, 3, 4, 5, or 6 History Misfire Counter | — | Counts | This parameter displays the number of misfires detected for cylinder's 1–6 since a misfire failure has been reported. |
| Cylinder 1, 2, 3, 4, 5, or 6 Fuel Injection Timing | — | ° | This parameter displays the start point of the main injection in degrees crank shaft (°CS) relative to Top Dead Center (TDC) of cylinder's 1–6. |
| Cylinder 1, 2, 3, 4, 5, or 6 Fuel Injector Command | — | ms | This parameter displays the total injection time of cylinder's 1–6. Total injection time includes all pilot injections, main injections and post injections. |
| Cylinder 1, 2, 3, 4, 5, or 6 Fuel Injector Control Circuit Status | — | Okay | This parameter displays the status of the fuel injector's 1–6 output malfunction for Short circuit from injector high side to ground or system voltage, Short circuit from injector low side to injector low side, Short circuit from injector low side to ground or system voltage, Short circuit from injector high side to low side and Injector open circuit. |
| Cylinder 1, 2, 3, 4, 5, or 6 Fuel Injector Flow Identifier | — | # | This parameter is used to correct the injected quantity of each injector<br>When injectors are replaced or exchanged, the Injector Quantity adjustment values of the replaced or exchanged injectors have to be entered into the ECM to ensure acceptable engine performance regarding emissions |
| Cylinder Head Temperature Sensor | — | °C (°F) | This parameter displays the cylinder head temperature in °C (°F). |
| Cylinder Head Temperature Sensor 2 | — | °C (°F) | This parameter displays the cylinder head temperature in °C (°F). |
| Deceleration Fuel Cut-Off | — | Inactive | Decel Fuel Cut Off Active indicates that the conditions to enable deceleration fuel cut-off (DFCO) are active and that torque is being reduced by turning off one or more fuel injectors |
| Desired Exhaust Gas Recirculation Valve Position | — | % | This parameter displays the position of the exhaust gas recirculation (EGR) valve commanded by the control module. The scan tool will display 0 percent when the control module is commanding the EGR valve closed. The scan tool will display a higher percentage when the EGR valve is commanded open. |
| Desired Fuel Pressure | Ignition ON | kPa (PSI) | This parameter displays the desired fuel supply pressure. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Desired Fuel Rail Pressure | — | MPa/PSI | This parameter displays the desired fuel rail pressure as calculated by the control module. This value is calculated based on engine speed, engine load, and sensor inputs. The scan tool will display a higher value at higher engine speeds and loads, and a lower value at idle. |
| Desired Idle Speed | — | 600–825 RPM | This parameter displays the engine idle speed in RPM as commanded by the control module. The control module compensates for various engine loads in order to maintain the desired engine speed at idle. This parameter is not valid unless the engine is running. |
| Desired Intake Air Flow Control Valve Position | — | % | This parameter will display the position of the intake air flow control valve as a percentage. |
| Desired Nitrogen Oxides Catalytic Converter Reductant Load | — | g | This parameter contains the NH3 (Ammonia) storage setpoint value for the Selective Catalyst Reduction (SCR) system in terms of grams. |
| Desired Reductant Injector Command | — | ms | This parameter contains the desired injection time of the reductant dosing valve. |
| Desired Reductant Pressure | — | kPa (PSI) | This parameter contains the desired reductant system pressure. |
| Desired Turbocharger/ Supercharger Boost Control Position | — | % | This parameter displays the position of the turbocharger vane position sensor as the turbocharger vane position is commanded by the control module. The scan tool will display 0 percent when the control module is commanding the vanes open. The scan tool will display a higher percentage when the vanes are commanded closed. |
| Desired Turbocharger/ Supercharger Boost Pressure | — | kPa (PSI) | This parameter displays the Turbocharger Boost pressure as commanded by the control module. This parameter shows the turbocharger boost pressure in kPa (PSI). |
| Distance Driven from Diagnostic Trouble Code Clear to First Malfunction | — | km/miles | This parameter displays the distance accumulated since DTC Clear to first occurrence of a DTC malfunction. This parameter is only meaningful within the context of a failure record or freeze frame. |
| Distance Driven from Diagnostic Trouble Code Clear to Last Malfunction | — | km/miles | This parameter displays the distance accumulated since DTC Clear to last occurrence of a DTC malfunction. This parameter is only meaningful within the context of a failure record or freeze frame. |
| Distance Since Last Particulate Filter Regeneration | — | km/miles | This parameter will display the amount of vehicle travel after a Particulate Filter regeneration. This parameter will be displayed in km/ miles. |
| Distance This Driving Cycle | — | km/miles | This parameter displays the distance a vehicle has traveled in the current driving cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Distance Since Last Particulate Filter Regeneration | — | km/miles | This parameter will display the distance since the last particulate filter regeneration event. |
| Drag control Status | — | Active/Inactive | EDC Active (Drag Active) control mode is indicated when the requested torque signal is above the driver requested value while the traction control system signal input is active. |
| Driver Demanded Engine Torque | — | % | This parameter displays the requested torque output of the engine by the driver. |
| Drop Throttle Detected while Traction Control Active | — | No | Drop Throttle Control Mode is indicated when this parameter displays Yes. |
| Drop Throttle Status | — | Inactive | This parameter provides an indication when the controller software determines a condition is present where the vehicle operator has abruptly released the accelerator pedal (drop-throttle) after a period of acceleration. |
| ECM Authentication Status | — | Valid | Authentication Status indicates the result of the comparison between the last received immobilizer response and the expected response calculated by the engine control module (ECM). |
| ECM Challenge Status | — | Valid | This parameter displays the condition of the ECM code challenge to the BCM. |
| ECM Requested Particulate Matter Mass Concentration Measurement | — | No | This parameter indicates the ECM has requested a measurement of particulate matter mass from the particulate matter sensor. |
| ECM Requested Particulate Matter Sensor Initialization | — | No | This parameter displays Yes when the particulate matter sensor is initialized by the ECM. |
| ECM Response Source | — | Normal Start | This parameter displays ECM response source. |
| ECT Sensor | — | 85–105°C/185–220°F | This parameter displays the temperature of the engine coolant based on the input from the engine coolant temperature (ECT) sensor. When the coolant temperature is low, the scan tool will display a low temperature. When the coolant temperature is high, the scan tool will display a high temperature. |
| EGR/Camshaft Position Monitor Complete | — | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete. |
| EGR/Camshaft Position Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is complete this Ignition Cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| EGR/Camshaft Position Monitor Enabled | — | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled. |
| EGR/Camshaft Position Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the status of the EGR/Camshaft Position Monitor for this Ignition Cycle. The parameter will display Yes when the EGR/Camshaft Position Monitor is Enabled this Ignition Cycle. |
| EGR Command | — | % | This parameter displays the commanded duty cycle for the exhaust gas recirculation (EGR) output. |
| EGR Control Circuit 1 High Voltage Status | — | OK | This parameter displays the state of the EGR Control circuit 1. The parameter displays Malfunction if the EGR Control circuit 1 is shorted to voltage. |
| EGR Control Circuit 1 Low Voltage Status | — | OK | This parameter displays the state of the EGR Control circuit 1. The parameter displays Malfunction if the EGR Control circuit 1 is shorted to ground. |
| EGR Control Circuit 2 High Voltage Status | — | OK | This parameter displays the state of the EGR Control circuit 2. The parameter displays Malfunction if the EGR Control circuit 2 is shorted to voltage. |
| EGR Control Circuit 2 Low Voltage Status | — | OK | This parameter displays the state of the EGR Control circuit 2. The parameter displays Malfunction if the EGR Control circuit 2 is shorted to ground. |
| EGR Control Circuit Open Test Status | — | OK | This parameter displays the state of the EGR Control circuit. The parameter displays Malfunction if the EGR Control circuit is open. |
| EGR Control Circuit Shorted Test Status | — | OK | This parameter displays the state of the EGR Control circuit. The parameter displays Malfunction if the EGR Control circuit is shorted. |
| EGR Control Driver Overcurrent | — | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes if the EGR Control Driver Overcurrent is detected. |
| EGR Control Driver Overtemperature | — | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes if Over Temperature is Detected and that the driver circuit has been shut OFF. |
| EGR Control Driver Temperature Dependent Overcurrent | — | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes if Temperature Dependent over Current Detected and that the driver circuit has been shut OFF. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| EGR Control Driver Undervoltage | — | No | This parameter displays the state of the EGR Control circuit. The parameter displays Yes when the Under Voltage Detected indicates that the entire system voltage is low. |
| EGR Cooler Bypass Valve Command | — | % | This parameter displays the commanded duty cycle for the Exhaust Gas Recirculation Cooler Bypass Valve actuator output. |
| EGR Cooler Bypass Valve Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Malfunction if the EGR Cooler Bypass Valve Control circuit is shorted to voltage. |
| EGR Cooler Bypass Valve Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Malfunction if the EGR Cooler Bypass Valve Control circuit is shorted to ground. |
| EGR Cooler Bypass Valve Control Circuit Open Test Status | — | OK | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Malfunction if the EGR Cooler Bypass Valve Control circuit is open. |
| EGR Cooler Bypass Valve Control Circuit Shorted Test Status | — | OK, Malfunction, Not Run | This parameter contains the control circuit status of the exhaust gas recirculation cooler bypass valve output |
| EGR Cooler Bypass Valve Control Driver Overcurrent | — | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes if the EGR Cooler Bypass Valve Control Driver Overcurrent is detected. |
| EGR Cooler Bypass Valve Control Driver Overtemperature | — | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes if Over Temperature is Detected and that the driver circuit has been shut OFF. |
| EGR Cooler Bypass Valve Control Driver Temperature Dependant Overcurrent | — | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes if Temperature Dependent over Current Detected and that the driver circuit has been shut OFF. |
| EGR Cooler Bypass Valve Control Driver Undervoltage | — | No | This parameter displays the state of the EGR Cooler Bypass Valve Control circuit. The parameter displays Yes when the Under Voltage Detected indicates that the entire system voltage is low. |
| EGR Cooler Bypass Valve Learned Closed Position | — | OK, Malfunction, Not Run | This parameter contains the control circuit status of the exhaust gas recirculation cooler bypass valve output |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| EGR Cooler Bypass Valve Learned Open Position | — | OK, Malfunction, Not Run | This parameter contains the control circuit status of the exhaust gas recirculation cooler bypass valve output |
| EGR Cooler Bypass Valve Position | — | % | This parameter contains the actual exhaust gas recirculation (EGR) cooler bypass valve displacement determined by a position sensor (corrected based upon its learned minimum position). |
| EGR Cooler Bypass Valve Position Sensor | — | Volts | This parameter contains the Exhaust Gas Recirculation Cooler Bypass Valve position sensor analog input as a percentage of its reference voltage |
| EGR Cooler Temperature Sensor 1 | — | °C (°F) | This parameter will display the exhaust temperature entering the EGR Cooler. The EGR Temp Sensor 1 temperature will be warmer than the EGR Temp Sensor 2. |
| EGR Cooler Temperature Sensor 2 | — | °C (°F) | This parameter will display the exhaust temperature exiting the EGR Cooler. The EGR Temp Sensor 2 temperature will be cooler than the EGR Temp Sensor 1. |
| EGR Temperature Sensor 1 | — | ºC (ºF) | This parameter contains the undefaulted exhaust gas recirculation cooler temperature measured by a sensor that is located before the inlet of the EGR heat exchanger. |
| EGR Temperature Sensor 2 | — | ºC (ºF) | This parameter contains the undefaulted exhaust gas recirculation cooler temperature measured by a sensor that is located on the outlet of the EGR heat exchanger. |
| EGR Learned Minimum Position | — | Volts | This parameter displays the learned minimum position of the EGR valve as calculated by the control module. The scan tool will display a low value if the current closed EGR position is the same as the last ignition cycle. The scan tool will display a higher value if the EGR valve has closed at a new position. |
| EGR Learned Minimum Position This Ignition Cycle | — | % | This parameter displays the Exhaust Gas Recirculation Sensor Learned Minimum Position. |
| EGR Position Sensor | — | % | This parameter displays the EGR valve position as calculated by the control module based on an input from the EGR valve position sensor. The scan tool will display a lower value when the EGR valve is closed, and a higher value when the EGR valve is open. |
| EGR Position Sensor | — | 1.75 Volts | This parameter displays the voltage signal received from the EGR valve position sensor by the control module. The scan tool will display a lower value when the EGR valve is closed, and a higher value when the EGR valve is open. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| EGR Position Variance | — | % | This parameter displays the EGR position variance from the last learned position. |
| EGR System Malfunction Warning Indicator Command | — | Off | This parameter indicates when the EGR system malfunction warming indicator is commanded ON. |
| Electric Power management Inhibit reason | — | None | This parameter displays the reason of the Regulated Voltage Control (RVC) override command. RVC lowers system operating voltage to reduce system electrical load and improve fuel economy performance. |
| Engine Calibration Monitoring | — | Not Present | This parameter displays Present when Incorrect Engine Calibration Detected. |
| Engine Calibration Monitoring Identifier | — | Programmed / Not Programmed | This parameter contains status bits associated with the Engine Upgrade Protection strategy. |
| Engine Calibration Part Number History 1–10 | — | # | This parameter displays the part number of the 10 most recent calibrations. |
| Engine Calibration Part Number History 1–10 Counter | — | Counts | This parameter displays the current count of engine calibrations. |
| Engine Controls Ignition Relay Command | — | On | This parameter displays the state of the control circuit for engine control module power relay as commanded by the engine control module. |
| Engine Controls Ignition Relay Feedback 2 Signal | Ignition ON | Volts | This parameter indicates the signal voltage from the second input to the controller from the powertrain relay. |
| Engine Controls Ignition Relay Feedback 3 Signal | Ignition ON | Volts | This parameter indicates the signal voltage from the third input to the controller from the powertrain relay. |
| Engine Controls Ignition Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is shorted to voltage. |
| Engine Controls Ignition Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is shorted to ground. |
| Engine Controls Ignition Relay Control Circuit Open Test Status | — | OK | This parameter displays the state of the Engine Controls Ignition Relay control circuit. The parameter displays Malfunction if the Engine Controls Ignition Relay control circuit is open. |
| Engine Controls Ignition Relay Feedback Signal | — | 12.0-14.9 V | This parameter displays the voltage available at the Engine Controls Ignition Relay pin of the engine control module. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Engine Load | — | Varies | This parameter displays the engine load in percent based on inputs to the control module from various engine sensors. The scan tool will display a low percentage when the engine is at idle with little or no load. The scan tool will display a high percentage when the engine is running at a high RPM under a heavy load. |
| Engine Load During Misfire History 1-10 | Ignition ON | % | This parameter displays the engine load during the last misfire event. |
| Engine Off Time | — | 0:00:00 Seconds – Varies | This parameter displays the amount of time that has elapsed since the engine was last cycled OFF. |
| Engine Oil Absolute Pressure Sensor | — | kPa/PSI | This parameter displays the absolute pressure of the engine oil in kPa and psi. |
| Engine Oil Level Switch | — | OK/Low | This parameter displays the status of the engine oil level switch as determined by the control module. The control module uses this information to turn on the low engine oil lamp if the engine oil level remains approximately 1 quart low for a sufficient amount of time. The scan tool will display Low when the engine oil level is low. The scan tool will display OK when the engine oil level is correct. |
| Engine Oil Life Remaining | — | Varies | This parameter displays the amount engine oil life remaining before requiring an oil change based on calculations by the control module. The scan tool will display lower values as the engine oil life approaches 0 miles. |
| Engine Oil Pressure | — | kPa/PSI | This parameter displays the pressure of the engine oil as calculated by the control module using a signal from the engine oil pressure (EOP) sensor. The scan tool will display oil pressure when the engine is running. The engine oil pressure sensor has a range of values indicating a low value when the oil pressure is low to a high value when the oil pressure is high. |
| Engine Oil Pressure Control Solenoid Valve Command | — | High Pressure/Low Pressure | This parameter displays the current command of the oil pressure solenoid valve. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit High Voltage Test Status | — | OK | This parameter displays the status of the output driver for the engine oil pressure control solenoid circuit. The parameter displays Malfunction if the engine oil pressure control solenoid circuit is shorted to voltage. |
| Engine Oil Pressure Control Solenoid Valve Control Circuit Low Voltage Test Status | — | OK | This parameter displays the status of the output driver for the engine oil pressure control solenoid circuit. The parameter displays Malfunction if the engine oil pressure control solenoid circuit is shorted to ground. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Engine Oil Pressure Control Solenoid Valve Control Circuit Open Voltage Test Status | — | OK | This parameter displays the status of the output driver for the engine oil pressure control solenoid circuit. The parameter displays Malfunction if the engine oil pressure control solenoid circuit is open. |
| Engine Oil Pressure Sensor | — | Volts | This parameter displays the actual engine oil pressure measured by a sensor in volts. |
| Engine Oil Pressure Switch | — | OK | This parameter displays the state of the EOP as determined by the control module. The control module monitors the engine oil pressure (EOP) switch to determine if the EOP is sufficient. The scan tool will display low when the EOP is below a predetermined value. |
| Engine Run Time | — | Varies | This parameter displays the time elapsed since the engine was started. The scan tool will display the time in hours, minutes and seconds. The engine run time will reset to zero when the engine stops running. |
| Engine Run Time Since Last Particulate Filter Regeneration | — | hh:mm:ss | This parameter displays the total of time since the last regeneration. This parameter will be displayed in hours, minutes and seconds. |
| Engine Serial Number | — | # | This parameter displays the current engine serial number. |
| Engine Speed | — | 600–800 RPM | This parameter displays the speed of the crankshaft as determined by the ECM using an input from the CKP sensor. The scan tool will display a high value at high engine speeds and a low value at low engine speeds. |
| Engine Speed During Misfire History 1–5 | Ignition ON | RPM | This parameter displays the last 5 engine speeds during misfire events. |
| Engine Speed When Engine Overspeed Detected | Engine Idling | RPM | This parameter displays the engine speed observed upon initial detection of an overspeed condition. This value will be updated after each overspeed condition. |
| Engine Torque | — | Varies | This parameter displays the estimated amount of torque that is delivered from the engine. The scan tool displays engine torque in newtonm (lb-ft). The ECM sends the engine torque information to the TCM via the high speed GMLAN serial data line. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injection System | — | Inactive | This parameter displays the state of the Exhaust Aftertreatment Fuel Injection System command. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Test Abort Reasons | — | None, Fuel Pressure Out of Range, Vehicle Speed Detected, Incorrect Power Mode, Exhaust Gas Temperature Too High, DTC Present, Diesel Particulate Filter Regeneration Active, Engine Must Be Running, Transmission Must Be in Park or Neutral, Exhaust Gas Temperature Too Low | This parameter contains the abort reason for the Exhaust Aftertreatment Fuel Injector Tip Cleaning Trigger Device Control and Exhaust Aftertreatment Fuel Injector Flow Test Trigger |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Test Status | — | Not Requested, Flow Test Active, Flow Test Complete, Flow Test Aborted, Cleaning Procedure Active, Cleaning Procedure Complete, Cleaning Procedure Aborted | This parameter contains the status of the Exhaust Aftertreatment Fuel Injector Tip Cleaning and Flow Test device controls. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Command | — | % | This parameter displays the state of the Exhaust Aftertreatment Fuel Injection System command in percentage. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Control Circuit Command | — | Off | This parameter displays the state of the Exhaust Aftertreatment Fuel Injection Control Circuit command. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Control Circuit High Voltage Test Status | — | OK | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector circuit is shorted to voltage. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Control Circuit Low Voltage Test Status | — | OK | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector control circuit is shorted to ground. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Control Circuit Open Test Status | — | OK | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector control circuit is open. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Control Circuit Shorted Test Status | — | OK | This parameter displays the status of the exhaust aftertreatment fuel injector control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector control circuit is shorted. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector Control Driver Overtemperature | — | No | This parameter displays if the Exhaust Aftertreatment Fuel Injector Control Driver (low side) has reached an overtemperature condition. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector High Control Circuit High Voltage Test Status | — | OK | This parameter displays the status of the exhaust aftertreatment fuel injector high control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector high control circuit is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector High Control Circuit Low Voltage Test Status | — | OK | This parameter displays the status of the exhaust aftertreatment fuel injector high control circuit. The parameter displays Malfunction if the exhaust aftertreatment fuel injector high control circuit is shorted to ground. |
| { If equipped }<br>Exhaust Aftertreatment Fuel Injector High Control Driver Overtemperature | — | No | This parameter displays if the Exhaust Aftertreatment Fuel Injector High Control Driver (high side) has reached an overtemperature condition. |
| { If equipped }<br>Exhaust Aftertreatment Monitor Complete | — | No | This parameter displays the state of Exhaust Aftertreatment Monitor. The parameter displays Yes when the Exhaust Aftertreatment Monitor is complete. |
| { If equipped }<br>Exhaust Aftertreatment Monitor Complete This Ignition Cycle | — | No | This parameter displays the state of Exhaust Aftertreatment Monitor Complete This Ignition Cycle. The parameter displays Yes when the Exhaust Aftertreatment Monitor is Complete This Ignition Cycle. |
| { If equipped }<br>Exhaust Aftertreatment Monitor Enabled | — | No | This parameter displays the status of the Exhaust Aftertreatment Monitor. The parameter will display Yes when the Exhaust Aftertreatment Monitor is Enabled. |
| { If equipped }<br>Exhaust Aftertreatment Monitor Enabled This Ignition Cycle | — | No | This parameter displays the status of the Exhaust Aftertreatment Monitor Enabled This Ignition Cycle. The parameter will display Yes when the Exhaust Aftertreatment Monitor is Enabled This Ignition Cycle. |
| Exhaust Brake Switch | — | Off | This parameter displays the status of the Exhaust Brake Switch. The parameter will display On when the Exhaust Brake Switch is enabled. |
| Exhaust Gas Sensor Monitor Complete | — | Yes/No | This parameter displays the state of Exhaust Gas Sensor Monitor. The parameter displays Yes when the Exhaust Gas Sensor Monitor is complete. |
| Exhaust Gas Sensor Monitor Complete This Ignition Cycle | — | Yes/No | This parameter displays the state of Exhaust Gas Sensor Monitor Complete This Ignition Cycle. The parameter displays Yes when the Exhaust Gas Sensor Monitor is Complete This Ignition Cycle. |
| Exhaust Gas Sensor Monitor Enabled | — | Yes/No | This parameter displays the status of the Exhaust Gas Sensor Monitor. The parameter will display Yes when the Exhaust Gas Sensor Monitor is Enabled. |
| Exhaust Gas Sensor Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the status of the Exhaust Gas Sensor Monitor Enabled This Ignition Cycle. The parameter will display Yes when the Exhaust Gas Sensor Monitor is Enabled This Ignition Cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Exhaust Gas Temperature Sensor 1, 2, 3, 4, or 5 | — | °C (°F) | This parameter will display the exhaust temperature before the DPF. When the exhaust temperature is low, the scan tool will display a low temperature. When the exhaust temperature is high, the scan tool will display a high temperature. |
| Exhaust Nitrogen Oxides Concentration High - Low Reductant Consumption Malfunction | — | Yes / No | This parameter displays Yes when excessive Nitrogen Oxides (NOx) are present in the exhaust, indicated by low reagent consumption. |
| Extended Travel Brake Pedal Position Signal | — | Released | This parameter displays the status of the Extended Travel Brake Pedal Position sensor. |
| Four Wheel Drive Crawl Mode | -— | Active / Inactive / Not Available | This parameter contains several signals associated with the status of the four wheel drive system. |
| Frozen Reductant – Diagnostic Inhibit | — | No | This parameter displays Yes if the reductant diagnostic is inoperative due to frozen reductant. |
| Frozen Reductant – Injection Inhibit | — | No | This parameter displays Yes if the reductant injection is inoperative due to frozen reductant. |
| Frozen Reductant – Refill Recognition Inhibit | — | No | This parameter displays Yes if the reductant refill monitor is inoperative due to frozen reductant. |
| Fuel Consumed Since Last DPF Regeneration | — | Liters/Gallons | This parameter displays the amount of fuel consumed since the last DPF regeneration. |
| Fuel Consumed Since Last DPF Replacement | — | Liters | This parameter displays the amount of Fuel Consumed Since Last DPF Replacement. |
| Fuel Consumption Rate | — | L/H | This parameter displays the amount of fuel consumed by engine per unit of time in liters per hour. NOTE: Engine Fuel Rate shall indicate zero L/H when the engine is not running. |
| Fuel Economy Mode Switch | Ignition ON | OK | This parameter displays the state of the fuel economy mode switch circuit. The parameter displays Malfunction if the fuel economy mode switch circuit is open. |
| Fuel Economy Mode Switch | Ignition ON | Volts | This parameter displays the economy mode switch reference voltage. |
| Fuel Filter Life Remaining | — | % | This parameter displays the fuel filter life remaining before requiring an fuel filter change. This number is calculated by the control module based on many inputs and is displayed as a percent. The lower the percentage, the sooner the next fuel filter change will be required. |
| Fuel Filter Pressure Switch | — | OK | This parameter displays the status of the fuel filter pressure switch. |
| Fuel Heater Relay Command | — | Off | This parameter displays the status of the fuel relay heater command. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Heater Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the status of the output driver for the fuel heater relay control circuit. The parameter displays Malfunction if the fuel heater relay control circuit is shorted to voltage. |
| Fuel Heater Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the status of the output driver for the fuel heater relay control circuit. The parameter displays Malfunction if the fuel heater relay control circuit is shorted to ground. |
| Fuel Heater Relay Control Circuit Open Test Status | — | OK | This parameter displays the status of the output driver for the fuel heater relay control circuit. The parameter displays Malfunction if the fuel heater relay control circuit is open. |
| Fuel Injection Mode | — | Normal, Homogeneous Combustion Mode, Particulate Filter Regeneration with High Oxygen Concentration, Fuel Injection Small Quantity Learn, Fuel Injection Small Quantity Learn, Particulate Filter Regeneration with Low Oxygen Concentration, NOx Adsorber Catalyst Regeneration, Lean SOx Adsorber Catalyst Regeneration, Rich SOx Adsorber Catalyst Regeneration, Inhomogeneous Combustion Mode, NOx Catalyst Heating Mode 1, NOx Catalyst Heating Mode 2, Park or Neutral Gear DPF Regeneration, Rich Idle DPF Regeneration, Engine Protection High Oxygen Concentration DPF Regeneration, Engine Protection Low Oxygen Concentration DPF Regeneration, Engine Protection SOx Adsorber Catalyst Regeneration, NOx Catalyst Heating Mode 3, Fuel Injection Small Quantity Learn Combustion Mode, Hydrocarbon Purge Combustion Mode, Park or Neutral Gear Hydrocarbon Purge Combustion Mode, Reductant System Malfunction Warning Service Bay Test Warm Up Combustion Mode, Reductant System Malfunction Warning Service Bay Test Combustion Mode, SOx Purge Combustion Mode, Emissions Combustion Mode, Fast Exhaust System Warm-Up, Exhaust System Warm-Up | This parameter indicates which of the injection modes that currently is active. |
| Fuel Level Sensor | — | Volts | This parameter displays the voltage from the sensor used to monitor the fuel level inside the fuel tank. |
| Fuel Level Sensor Rear Tank | — | Volts | This parameter contains the unfiltered fuel level sensor analog input for the secondary fuel tank as a percentage of its reference voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Pressure Sensor | — | kPa (PSI) | For Port Fuel Injected (PFI) systems, this parameter displays undefaulted fuel rail pressure at the engine. For high pressure fuel systems, this parameter indicates the undefaulted low side fuel pressure before the high pressure pump. |
| Fuel Pressure Sensor | — | Volts | This parameter contains the fuel supply pressure sensor analog input as a percentage of its reference voltage. |
| Fuel Pressure Regulator 1 Command | — | % | This parameter displays the Fuel Pressure Regulator 1 duty cycle as commanded by the engine control module. |
| Fuel Pressure Regulator 1 Control Circuit Command | — | On/Off | This parameter displays the current command of the fuel pressure regulator 1. |
| Fuel Pressure Regulator 1 Control Circuit High Voltage Test Status | — | OK | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit High. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Control Circuit High is shorted to voltage. |
| Fuel Pressure Regulator 1 Control Circuit Low Voltage Test Status | — | OK | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit High. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Control Circuit High is shorted to ground. |
| Fuel Pressure Regulator 1 Control Circuit Open Test Status | — | OK | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit High. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Control Circuit High is open. |
| Fuel Pressure Regulator 1 Control Circuit Shorted Test Status | — | OK | This parameter displays the status of the output driver for the Fuel Pressure Regulator 1 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 1 Circuit is shorted. |
| Fuel Pressure Regulator 1 Control Driver Overtemperature | — | No | This parameter displays the state of the Fuel Pressure Regulator 1 Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 1 Control Driver Overtemperature is detected. |
| Fuel Pressure Regulator 1 Current | — | mA | This parameter displays the actual current for the Fuel Pressure Regulator 1. |
| Fuel Pressure Regulator 1 High Control Circuit Command | — | On | This parameter displays the status of the Fuel Pressure Regulator 1 High Control Circuit Command. The parameter displays ON when the Fuel Pressure Regulator 1 High Control Circuit is Commanded ON by the engine control module. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Pressure Regulator 1 High Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 1 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 1 High Control Circuit is shorted to voltage. |
| Fuel Pressure Regulator 1 High Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 1 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 1 High Control Circuit is shorted to ground. |
| Fuel Pressure Regulator 1 High Control Driver Overtemperature | — | No | This parameter displays the state of the Fuel Pressure Regulator 1 High Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 1 High Control Driver Overtemperature is detected. |
| Fuel Pressure Regulator 2 Command | — | % | This parameter displays the Fuel Rail Pressure Regulator 2 duty cycle. |
| Fuel Pressure Regulator 2 Control Circuit Command | — | On | This parameter displays the current command of the fuel pressure regulator 2. |
| Fuel Pressure Regulator 2 Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is shorted to voltage. |
| Fuel Pressure Regulator 2 Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is shorted to ground. |
| Fuel Pressure Regulator 2 Control Circuit Open Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is open. |
| Fuel Pressure Regulator 2 Control Circuit Shorted Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 2 Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 Control Circuit is shorted. |
| Fuel Pressure Regulator 2 Control Driver Overtemperature | — | No | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 2 High Control Driver Overtemperature is detected. |
| Fuel Pressure Regulator 2 High Control Circuit Command | — | On/Off | This parameter displays the status of the Fuel Pressure Regulator 2 High Control Circuit Command. The parameter displays On when the Fuel Pressure Regulator 2 High Control Circuit is Commanded ON by the engine control module. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Pressure Regulator 2 High Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 High Control Circuit is shorted to voltage. |
| Fuel Pressure Regulator 2 High Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Circuit. The parameter displays Malfunction if the Fuel Pressure Regulator 2 High Control Circuit is shorted to ground. |
| Fuel Pressure Regulator 2 High Control Driver Overtemperature | — | No | This parameter displays the state of the Fuel Pressure Regulator 2 High Control Driver circuit. The parameter displays Yes if the Fuel Pressure Regulator 2 High Control Driver Overtemperature is detected. |
| Fuel Pressure Sensor | Engine Idling | kPa/PSI | For Port Fuel Injected (PFI) systems, this Parameter displays fuel rail pressure at the engine. For high pressure fuel systems, this Parameter indicates the low side fuel pressure before the high pressure pump. |
| Fuel Pressure Sensor | Ignition ON | Volts | This parameter displays the fuel supply pressure sensor analog input as a percentage of its reference voltage. |
| Fuel Pump 2 Relay Command | Ignition ON | On / Off | This parameter contains several signals associated with the status of the fuel system |
| Fuel Pump 2 Relay Command | Ignition ON | On / Off | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump 2 Relay Control Circuit High Voltage Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump 2 Relay Control Circuit Low Voltage Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump 2 Relay Control Circuit Open Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the commanded state of the secondary fuel pump output along with the status of its associated short to ground, open circuit, and short to power tests |
| Fuel Pump Driver Control Module Battery Voltage | Ignition ON | Volts | This parameter contains the Fuel Tank Zone Module’s (FTZM) sensed battery voltage that’s being transmitted from FTZM to the ECM over serial data |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Pump Driver Control Module Voltage Signal | Ignition ON | Volts | This parameter contains the Fuel Tank Zone Module's (FTZM) sensed Run/Crank voltage that's being transmitted from FTZM to the ECM over serial data. |
| Fuel Pump Enable Circuit High Voltage Test Status | Ignition ON | OK | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to voltage in the circuit. |
| Fuel Pump Enable Circuit Low Voltage Test Status | Ignition ON | OK | This parameter displays the status of the output driver for the fuel pump control circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an short to ground in the circuit. |
| Fuel Pump Enable Command | Ignition ON | On | This parameter displays the commanded state of the fuel pump output (the output is considered to be commanded ON if its duty cycle is not zero). |
| Fuel Pump Phase U-V-W Circuits High Voltage Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of short to ground, open circuit, short to power and phase-to-phase short tests |
| Fuel Pump Phase U-V-W Circuits Low Voltage Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of short to ground, open circuit, short to power and phase-to-phase short tests |
| Fuel Pump Phase U-V-W Circuits Open Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of short to ground, open circuit, short to power and phase-to-phase short tests |
| Fuel Pump Phase U-V-W Circuits Shorted Test Status | Ignition ON | OK, Malfunction, Not Run | This parameter contains the Fuel Tank Zone Module's (FTZM) reported status of short to ground, open circuit, short to power and phase-to-phase short tests |
| Fuel Pump Relay Command | — | On | This parameter displays the commanded state of the fuel pump relay control circuit. The fuel pump relay should be On when the scan tool indicates the Fuel Pump Relay Command is ON. The fuel pump relay should be Off when the scan tool indicates the Fuel Pump Relay Command is OFF. |
| Fuel Pump Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pump Relay Control Circuit. The parameter displays Malfunction if the Fuel Pump Relay Control Circuit is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel Pump Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Fuel Pump Relay Control Circuit. The parameter displays Malfunction if the Fuel Pump Relay Control Circuit is shorted to ground. |
| Fuel Pump Relay Control Circuit Open Test Status | — | OK | This parameter displays the state of the Fuel Pump Relay Control Circuit. The parameter displays Malfunction if the Fuel Pump Relay Control Circuit is open. |
| Fuel Pump Speed | Ignition ON | RPM | This parameter contains the fuel pump speed as sensed by the FTZM (Fuel Tank Zone Module). |
| Fuel Pump Speed Command | Ignition ON | RPM | This parameter contains the fuel pump commanded speed determined by the ECM and the speed to which the FTZM (Fuel Tank Zone Module) electronically commutates the brushless fuel pump. |
| Fuel Pump Speed Too High | Ignition ON | Yes / No | This parameter contains signals used within the Fuel Pump Speed Rationality Diagnostic (PSRD). |
| Fuel Pump Speed Too Low | Ignition ON | Yes / No | This parameter contains signals used within the Fuel Pump Speed Rationality Diagnostic (PSRD). |
| Fuel Pump Trim | Engine Running | 0–4 % | This parameter displays the adjustments for the fuel pump duty cycle control. This is calculated by comparing the estimated fuel rail pressure to the desired fuel rail pressure. If the short term fuel pump trim consistently deviates from 0, the long term fuel pump trim is adjusted accordingly. |
| Fuel Rail Pressure Regulator 1 Command | Ignition ON | % | This parameter contains the commanded duty cycle for the fuel pressure regulator 1 solenoid output. |
| Fuel Rail Pressure Sensor | — | 35–40 MPa (5076–5801 psi) | This parameter displays the fuel rail pressure as calculated by the control module. This value is calculated based on engine speed, engine load, and sensor inputs. The scan tool will display a higher value at higher engine speeds and loads, and a lower value at idle. |
| Fuel Rail Pressure Sensor | — | Volts | This parameter displays the voltage signal sent to the control module from the sensor used to measure the fuel rail pressure. The scan tool will display a low voltage at idle and high voltage when pressure demands are high. |
| Fuel Rail Temperature Sensor | — | °C (°F) | This parameter displays the current fuel rail temperature. |
| Fuel System Monitor Complete | — | Yes | This parameter displays the status of the Fuel System Monitor. The scan tool displays Yes when test is completed. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Fuel System Monitor Complete This Ignition Cycle | — | Yes | This parameter displays the state of the Fuel System Monitor Complete This Ignition Cycle. The parameter displays Yes when the Fuel System Monitor is Complete This Ignition Cycle. |
| Fuel System Monitor Enabled | — | Yes | This parameter displays the status of the Fuel System Monitor. The parameter will display Yes when the Fuel System Monitor is Enabled. |
| Fuel System Monitor Enabled This Ignition Cycle | — | Yes/No | This parameter displays the status of the Fuel System Monitor Enabled This Ignition Cycle. The parameter will display Yes when the Fuel System Monitor is Enabled This Ignition Cycle. |
| Fuel Tank Rated Capacity | — | Liters | This parameter displays the capacity of the fuel tank in liters or gallons. The rated capacity displayed by the scan tool will vary with vehicle type. |
| Fuel Temperature Sensor | — | °C (°F) | This parameter displays the current fuel temperature as calculated by the control module based on input from the fuel temperature sensor. The scan tool will display a higher value at higher fuel temperatures. The scan tool will display a lower value at lower fuel temperatures. |
| Fuel Trim | — | Mm3/stk | This parameter displays the Fuel Mass Observer (FMO) correction value. |
| Fuel Trim | — | Allowed | This parameter displays the status of the Fuel Mass Observer (FMO) system. |
| Fuel Trim Enabled | — | Yes | This parameter indicates that the fuel mass observer functionality is enabled. |
| Fuel Trim Learn | — | Enabled | This parameter displays the status of the Fuel Mass Observer (FMO) system. |
| Fuel Used Since Last DPF Regeneration | — | Liters/Gallons | This parameter will display the amount of fuel used since last regeneration of the exhaust particulate filter. |
| Generator F-Terminal Signal | — | 0–100% | This parameter indicates the generator field duty cycle as commanded by the voltage regulator or control module. The scan tool will display a higher value for a higher commanded generator output, and a lower value for a lower commanded generator output. |
| Generator L-Terminal Circuit High Voltage Test Status | — | OK | This parameter displays the diagnostic state of the Generator L-Terminal circuit. The scan tool will display OK, Incomplete, Short B+/ Open, Short Gnd. The scan tool will display OK if the circuit is operating correctly. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Generator L-Terminal Circuit Low Voltage Test Status | — | OK | This parameter displays the diagnostic state of the Generator L-Terminal circuit. The scan tool will display OK, Incomplete, Short B+/ Open, Short Gnd. The scan tool will display OK if the circuit is operating correctly. |
| Generator L-Terminal Circuit Open Test Status | — | OK | This parameter displays the diagnostic state of the Generator L-Terminal circuit. The scan tool will display OK, Incomplete, Short B+/ Open, Short Gnd. The scan tool will display OK if the circuit is operating correctly. |
| Generator L-Terminal Command | — | 0–100% | This parameter displays the control modules commanded state of the voltage regulator on the generator. |
| Generator L-Terminal Signal Command | — | On/Off | This parameter displays the signal command of the Generator L-Terminal. |
| Glow Plug Command | — | On/Off | This parameter displays the voltage supply to the glow plugs as measured by the control module. The scan tool will display a higher value at high voltages, or a lower value at lower voltages. |
| High Idle Speed | — | Enabled/Disabled | This parameter displays the current state of the High Idle Speed. |
| HO2S 1 | — | Lambda | This parameter displays the actual lambda signal measured by wide range oxygen sensor 1 bank 1. |
| H02S 1 Heater Command | — | On/Off | This parameter displays the current command of the oxygen sensor heater control. |
| H02S 1 Heater Command | — | % | This parameter displays the current command of the oxygen sensor heater control in percentage. |
| H02S 1 Heater Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to voltage. |
| H02S 1 Heater Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is shorted to ground. |
| H02S 1 Heater Control Circuit Open Test Status | — | OK | This parameter displays the state of the oxygen sensor heater control circuit. The parameter displays Malfunction if the oxygen sensor heater control circuit is open. |
| H02S 1 Module Signal | — | Volts | This parameter displays the current voltage of the oxygen sensor heater module signal circuit. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| IAT Sensor 1 | — | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| IAT Sensor 2 | — | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor 2. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| IAT Sensor 2 | — | Hz | This parameter displays the frequency of the humidity sensors' intake air temperature (IAT) sensor input to the engine control module. |
| IAT Sensor 3 | — | °C (°F) | This parameter displays the temperature of the air entering the engine as calculated by the control module based on the input from the intake air temperature (IAT) sensor 3. The scan tool will display a low value when the air temperature is low, and a high value when the air temperature is high. |
| Ignition 1 Signal | — | On/Off | This parameter displays On when the control module detects B+ voltage at the ignition 1 input terminal. |
| Ignition Accessory Signal | — | Off | This parameter displays the state of the ignition 0 input to the control module from the ignition switch. The scan tool will display On when the ignition switch is in the ignition accessory position. The scan tool will display Off when the ignition switch is in any other position. |
| Ignition Cycles with Malfunction Since 1st Malfunction | — | Counts | This parameter displays the number of ignition cycles with a malfunction detected since the first ignition cycle with a malfunction detected. |
| Ignition Cycles without Completed Test Since 1st Malfunction | — | Counts | This parameter displays the number of ignition cycles without a pass or a malfunction reported since the first ignition cycle with a malfunction reported. |
| Ignition Cycles without Malfunction Since Last Malfunction | — | Counts | This parameter displays the number of ignition cycles with a pass reported and no malfunctions reported since the first ignition cycle with a malfunction reported. |
| Immobilizer Auto Learn Counter | — | Counts | This parameter displays the number of auto learn cycles that have been successfully completed within the immobilizer system. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Immobilizer Automatic Learn Timer | — | hh:mm:ss | This parameter indicates that either the auto learn timer (used in the auto learn procedure to enable VTD password learning) or the seed and key timer (used in the seed and key procedure to enable VTD password learning) is active. |
| Immobilizer Password Learn | — | Disabled | This indicates learning of the Immobilizer password received from the platform electronics is enabled. Immobilizer password learning is first enabled in assembly plant (prior to the manufacturer's enable counter being set to zero) may be re-enabled using 1 of 2 procedures. |
| Immobilizer Password Learn Scan Tool Delay | — | Active/Inactive | Scan Tool Learn Delay Active indicates that the security code has been accepted but the scan tool learn delay is active and will not allow learning enabled, programming security code, or resetting security code. |
| Immobilizer Security Code Accepted | — | Yes | This parameter displays if the Immobilizer Security code was accepted by the ECM. |
| Immobilizer Security Code Function | — | Present | This parameter displays if the immobilizer security code was supported by the ECM. |
| Immobilizer Security Code Lockout | — | Inactive | This parameter displays if the Immobilizer Security code is locked out of the ECM. |
| Immobilizer Security Code Programmed | — | Yes | This parameter displays if the Immobilizer Security code is currently being programmed in the ECM. |
| Immobilizer Security Information Programmed | — | Yes | This parameter displays if the Immobilizer Security code has been programmed in the ECM. |
| Immobilizer System Status | — | Varies | This parameter displays the Immobilizer System status in the BCM. |
| Immobilizer Valid Response Received Time | — | ms | This parameter displays the actual time observed for a valid immobilizer response. |
| Induction System Leak Indication | — | :1 | This parameter contains the ratio of desired intake air flow and the actual intake air flow as determined by the mass air flow (MAF) sensor. |
| Injector Timing | — | ° | Indicates the current timing of the main injection pulse as calculated by the control module. The scan tool will display a higher value for a main injection event farther from top dead center (TDC). The Scan tool will display a lower value for a main injection event closer to TDC. |
| Inspection/Maintenance Drive Cycle Complete | — | No | Inspection/Maintenance Drive Cycle Complete means that all required components of the standard drive cycle have completed. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Inspection/Maintenance Drive Cycle Idle Time Complete | — | No | Inspection/Maintenance Drive Cycle Idle Time Complete indicates that the engine idle time requirement is complete. |
| Inspection/Maintenance Drive Cycle Idle Timer | — | hh:mm:ss | This parameter displays the Inspection/Maintenance Drive Cycle Idle Timer. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete | — | No | This parameter displays the Inspection/Maintenance Drive Cycle Propulsion System Active Time Complete. The parameter displays Yes when the Inspection/ Maintenance Drive Cycle Propulsion System Active Time is Complete. |
| Inspection/Maintenance Drive Cycle Propulsion System Active Timer | — | hh:mm:ss | This parameter displays the total accumulated time in which the propulsion system has been active after the 1st time the engine is started. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Time Complete | — | No | This parameter displays Yes when the Vehicle Speed Time Complete indicates that the vehicle has been above 25 mph for five minutes. |
| Inspection/Maintenance Drive Cycle Vehicle Speed Timer | — | hh:mm:ss | This parameter displays the total accumulated time in which the vehicle speed has been greater than 25 mph after the 1st time the engine is started. |
| Intake Air Flow Valve Control Circuit 1 High Voltage Test Status | — | OK | This parameter displays the status of the Intake Air Flow Valve Control Circuit 1 output driver. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to voltage in the circuit. |
| Intake Air Flow Valve Control Circuit 1 Low Voltage Test Status | — | OK | This parameter displays the status of the Intake Air Flow Valve Control Circuit 1 output driver. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to ground in the circuit. |
| Intake Air Flow Valve Control Circuit 2 High Voltage Test Status | — | OK | This parameter displays the status of the Intake Air Flow Valve Control Circuit 2 output driver. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to voltage in the circuit. |
| Intake Air Flow Valve Control Circuit 2 Low Voltage Test Status | — | OK | This parameter displays the status of the Intake Air Flow Valve Control Circuit 2 output driver. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short to ground in the circuit. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Intake Air Flow Valve Control Circuit Open Test Status | — | OK | This parameter displays the status of the Intake Air Flow Valve Control Circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is an open in the circuit. |
| Intake Air Flow Valve Control Circuit Shorted Test Status | — | OK | This parameter displays the status of the Intake Air Flow Valve Control Circuit. The scan tool will display OK if the circuit is operating correctly or Not Run if a diagnosis has not been made. The scan tool will display Malfunction if there is a short in the circuit. |
| Intake Air Flow Valve Control Driver Overcurrent | — | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when an overcurrent is detected. |
| Intake Air Flow Valve Control Driver Overtemperature | — | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when overtemperature is detected. |
| Intake Air Flow Valve Control Driver Temperature Dependent Overcurrent | — | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when Temperature Dependent Overcurrent is detected. |
| Intake Air Flow Valve Control Driver Undervoltage | — | No | This parameter displays the status of the Intake Air Flow Valve Control driver. The scan tool will display Yes when Undervoltage is detected. |
| Intake Air Flow Valve Learned Closed Position | — | % | This parameter displays the minimum position learned for Intake Air Flow Valve position sensor when the Intake Air Flow Valve is closed. |
| Intake Air Flow Valve Motor Command | — | % | This parameter displays the commanded duty cycle for the Intake Airflow Valve output. |
| Intake Air Flow Valve Position | — | % | This parameter displays the position determined from Intake Air Flow Valve position sensor (corrected based upon its learned minimum position). |
| Intake Air Flow Valve Position Sensor | — | Volts | This parameter displays the Intake Air Flow Valve position sensor voltage input. |
| Intake Air Heater Command | — | On/Off | This parameter displays the current status of the Intake Air Heater. |
| Intake Air Heater Command | — | % | This parameter displays the current status of the Intake Air Heater in percentage. |
| Intake Air Humidity Sensor | — | % | This parameter displays the percentage of humidity at the intake air sensor. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Intake Manifold Pressure | — | kPa | This parameter displays the engine intake manifold vacuum pressure calculated as the difference between ambient air pressure (barometric pressure) and intake manifold absolute pressure (MAP). |
| Intake Manifold Runner Control Valve Command | — | % | This parameter displays the current command in percentage of the intake manifold runner control valve. |
| Intake Manifold Runner Control Valve Diagnostic Test Status | — | Varies | This parameter displays the current phase of the intake manifold runner control valve diagnostic test. |
| Intake Manifold Runner Control Valve Feedback Signal | — | % | This parameter displays the current command in percentage of the intake manifold runner control valve feedback signal. |
| Intake Manifold Runner Control Valve Position | — | Open, Intermediate, Closed | This parameter displays the current position of the intake manifold runner control valve. |
| Intake/Single Camshaft Position Active Counter | — | Counts | This parameter displays an incrementing counter when the control module receives a signal from the camshaft position sensor. |
| Intake/Single Camshaft Position Sensor | Engine Idling | 0 RPM | This parameter displays the speed of the engine as calculated by the signal from a camshaft position (CMP) sensor. This parameter will always display 0 unless a condition with the CKP sensor or CKP reluctor exists. If a CKP condition exists the control module will use a valid CMP sensor signal to determine engine speed and crank/ camshaft position. |
| Lost Communication with NOX Sensor - Engine Malfunction | — | Yes / No | This parameter displays Yes if the engine controller lost serial data communication with NOx Sensor A. |
| Lost Communication with NOX Sensor - Post Catalytic Converter Malfunction | — | Yes / No | This parameter displays Yes if the engine controller lost serial data communication with NOx Sensor B (post catalyst NOx sensor) |
| Lost Communication with NOX Sensor - Post Catalytic Converter 2 Malfunction | — | Yes / No | This parameter displays Yes if the engine controller lost serial data communication with NOx Sensor C. |
| Low Engine Oil Level Indicator Command | — | Off | This parameter displays the Engine Oil Level Low Indicator Command. The scan tool displays ON in order to inform the driver of a low engine oil level condition. |
| Low Engine Oil Pressure Indicator Command | — | Off | This parameter displays the Low Engine Oil Indicator Command. The scan tool displays ON in order to inform the driver of a low engine oil pressure condition. |
| MAF Sensor | Engine Idling | 6–20 g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds. |
|  | Engine speed at 2,500 RPM | 130–150 g/s |  |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| MAF Sensor | — | 2300–3100 Hz | This parameter indicates the frequency signal received from the MAF sensor by the control module. The scan tool will display a high value at high engine speeds, and a low value at low engine speeds. |
| MAF When Engine Overspeed Detected | Engine Idling | g/s | This parameter indicates the quantity calculated by the control module based on a signal from the MAF sensor at the time an overspeed was detected. |
| Main-Injection | — | Inactive | Main Injection Active indicates that main injection is active. |
| MAP Sensor | — | 0.95–1.06 Volts | This parameter indicates the voltage signal received by the control module from the MAP sensor. The scan tool displays a low voltage at idle, and a high voltage at wide open throttle. Barometric pressure and altitude can affect these values. |
| MAP Sensor | — | kPa/PSI | This parameter displays the actual engine intake manifold absolute pressure (MAP). |
| MIL Command | — | Off | This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit by the engine control module. |
| MIL Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to voltage. |
| MIL Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is shorted to ground. |
| MIL Control Circuit Open Test Status | — | OK | This parameter displays the state of the MIL control circuit. The parameter displays Malfunction if the MIL control circuit is open. |
| MIL Requested | — | No | This parameter displays the commanded state of the malfunction indicator lamp (MIL) control circuit by the engine control module. |
| MIL Requested by DTC | — | No | This parameter indicates the reason the control module illuminated the MIL. The scan tool will display Yes when the MIL is requested as a result of an A or B type DTC. The scan tool will display No if the MIL is illuminated for another reason, such as transmission DTCs. |
| Misfire Diagnostic Engine Speed | Engine Idling | RPM | This parameter displays the engine speed used within the misfire diagnostic. This engine speed is the maximum engine speed observed over the previous engine cycle. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Misfire Monitor Complete | — | No | This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Complete. |
| Misfire Monitor Complete This Ignition Cycle | — | Varies | This parameter displays the diagnostic monitor enable status during the current driving/ monitoring cycle. |
| Misfire Monitor Enabled | — | No | This parameter displays the status of the Misfire Monitor. The parameter will display Yes when the Misfire Monitor is Enabled. |
| Misfire Monitor Enabled This Ignition Cycle | — | Varies | This parameter displays the diagnostic monitor enable status during the current driving/ monitoring cycle. |
| Neutral Position Sensor | — | % | This parameter displays the current state of the neutral position sensor in degrees. |
| Nitrogen Oxides Catalytic Converter Efficiency Gross Error Test | — | % | This parameter displays the measured average Selective Catalyst Reduction (SCR) efficiency for urea quality determination during the gross error test. |
| Nitrogen Oxides Catalytic Converter Efficiency Small Error Test Variation | — | % | This parameter displays the Selective Catalyst Reduction (SCR) efficiency urea quality deviation during the small error test. |
| Nitrogen Oxides Catalytic Converter Efficiency Small Error Test Threshold | — | % | This parameter displays the Selective Catalyst Reduction (SCR) efficiency urea quality deviation threshold which triggers fast adaptation. |
| Nitrogen Oxides Catalytic Converter Reductant Load | — | g | This parameter contains the NH3 (Ammonia) storage in the Selective Catalyst (SCR) Reduction system in terms of grams. |
| Nitrogen Oxides Catalytic Converter Reductant-Load Adaptive Value | — | # | This parameter displays the SCR long term adaptation factor. |
| Nitrogen Oxides Catalytic Converter System Malfunction Warning Indicator Command | — | Warning Level 1–7 | This parameter displays the Non-Tamper Selective Catalyst Reduction (SCR) warning command. |
| Nitrogen Oxides Sensor Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Circuit. The parameter displays Malfunction if the Bank 1 Sensor 1 circuit is open or shorted. |
| Nitrogen Oxides Sensor Heater Control Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Heater Control Circuit. The parameter displays Malfunction if the Heater Circuit is open or shorted. |
| Nitrogen Oxides Sensor Heater Feedback Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Heater Feedback Circuit. The parameter displays Malfunction if the heater feedback circuit is open or shorted. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Nitrogen Oxides Sensor Heater Ground Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Heater Ground Circuit. The parameter displays Malfunction if the heater ground circuit is open or shorted. |
| Nitrogen Oxides Sensor Heater Supply Voltage Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Heater Supply Voltage Circuit. The parameter displays Malfunction if the heater supply voltage circuit is open or shorted. |
| Nitrogen Oxides Emissions Monitor Efficiency | — | % | This parameter displays the measured nitrogen oxides emissions monitor efficiency. |
| Nitrogen Oxides Emissions Warning Indicator | — | 0–15 | This parameter displays the nitrogen oxides emissions too high warning level. |
| Nitrogen Oxides Sensor Heater Control Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor heater supply circuit is shorted high. |
| Nitrogen Oxides Sensor Heater Control Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor heater supply circuit is shorted low. |
| Nitrogen Oxides Sensor Heater Control Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor heater supply circuit is shorted open. |
| Nitrogen Oxides Sensor Heater Feedback Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor temperature circuit is shorted high. |
| Nitrogen Oxides Sensor Heater Feedback Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor temperature circuit is shorted low. |
| Nitrogen Oxides Sensor Heater Feedback Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor temperature circuit is open. |
| Nitrogen Oxides Sensor Heater Ground Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor heater feedback circuit is shorted high. |
| Nitrogen Oxides Sensor Heater Ground Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor heater feedback circuit is shorted low. |
| Nitrogen Oxides Sensor Heater Ground Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor heater feedback circuit is open. |
| Nitrogen Oxides Sensor Heater Mode | — | Varies | This parameter displays the status of the nitrogen oxides sensor heater. |
| Nitrogen Oxides Sensor Heater Operation | — | Allowed / Not Allowed | This parameter displays the state of the nitrogen oxides sensor heater operation. The parameter displays Allowed when commanded by the engine control module. |
| Nitrogen Oxides Sensor Heater Resistance | — | Ω | This parameter displays the resistance value of the nitrogen oxides sensor 1 heater. |
| Nitrogen Oxides Sensor Nitrogen Oxides Concentration | — | ppm | This parameter displays the concentration of nitrogen oxides in the exhaust gas detected by nitrogen oxides sensor 1. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Nitrogen Oxides Sensor Signal Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor signal circuit is shorted high. |
| Nitrogen Oxides Sensor Signal Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor signal circuit is shorted low. |
| Nitrogen Oxides Sensor Signal Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor Signal Circuit. The parameter displays Malfunction if the sensor signal circuit is open or shorted. |
| Nitrogen Oxides Sensor Signal Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor signal circuit is open. |
| Nitrogen Oxides Sensor Oxygen Concentration | — | % | This parameter displays the concentration of Oxygen in the exhaust gas from nitrogen oxides sensor 1. |
| Nitrogen Oxides Catalytic Converter 2 Efficiency | — | % | This parameter displays the measured Selective Catalyst Reduction 2 (SCR2) efficiency. |
| Nitrogen Oxides Catalytic Converter 2 Efficiency During Particulate Filter Regeneration | — | % | This parameter displays the Selective Catalyst Reduction 2 (SCR2) efficiency monitor estimated average efficiency during particulate filter regeneration. |
| Nitrogen Oxides Sensor 2 Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Circuit. The parameter displays Malfunction if the Bank 1 Sensor 2 circuit is open or shorted. |
| Nitrogen Oxides Sensor 2 Heater Control Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 heater supply circuit is shorted high. |
| Nitrogen Oxides Sensor 2 Heater Control Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 heater supply circuit is shorted low. |
| Nitrogen Oxides Sensor 2 Heater Control Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Heater Control Circuit. The parameter displays Malfunction if the heater control circuit is open or shorted. |
| Nitrogen Oxides Sensor 2 Heater Control Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 heater supply circuit is shorted open. |
| Nitrogen Oxides Sensor 2 Heater Feedback Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 temperature circuit is shorted high. |
| Nitrogen Oxides Sensor 2 Heater Feedback Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 temperature circuit is shorted low. |
| Nitrogen Oxides Sensor 2 Heater Feedback Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Heater Feedback Circuit. The parameter displays Malfunction if the heater feedback circuit is open or shorted. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Nitrogen Oxides Sensor 2 Heater Feedback Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 temperature circuit is open. |
| Nitrogen Oxides Sensor 2 Heater Ground Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 heater feedback circuit is shorted high. |
| Nitrogen Oxides Sensor 2 Heater Ground Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 heater feedback circuit is shorted low. |
| Nitrogen Oxides Sensor 2 Heater Ground Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Heater Ground Circuit. The parameter displays Malfunction if the heater ground circuit is open or shorted. |
| Nitrogen Oxides Sensor 2 Heater Ground Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 heater feedback circuit is open. |
| Nitrogen Oxides Sensor 2 Heater Mode | — | Varies | This parameter displays the status of the nitrogen oxides sensor 2 heater. |
| Nitrogen Oxides Sensor 2 Heater Operation | — | Allowed / Not Allowed | This parameter displays the state of the nitrogen oxides sensor 2 heater operation. The parameter displays Allowed when commanded by the engine control module. |
| Nitrogen Oxides Sensor 2 Heater Resistance | — | Ω | This parameter displays the resistance value of the nitrogen oxides sensor 2 heater. |
| Nitrogen Oxides Sensor 2 Heater Supply Voltage Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Heater Supply Voltage Circuit. The parameter displays Malfunction if the heater supply voltage circuit is open or shorted. |
| Nitrogen Oxides Sensor 2 Nitrogen Oxides Concentration | — | ppm | This parameter displays the concentration of nitrogen oxides in the exhaust gas detected by nitrogen oxides sensor 2. |
| Nitrogen Oxides Sensor 2 Signal Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 signal circuit is shorted high. |
| Nitrogen Oxides Sensor 2 Signal Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 signal circuit is shorted low. |
| Nitrogen Oxides Sensor 2 Signal Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Signal Circuit. The parameter displays Malfunction if the signal circuit is open or shorted. |
| Nitrogen Oxides Sensor 2 Signal Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 2 signal circuit is open. |
| Nitrogen Oxides Sensor 2 Oxygen Concentration | — | % | This parameter displays the concentration of Oxygen in the exhaust gas from nitrogen oxides sensor 2. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Nitrogen Oxides Sensor 3 Heater Control Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 heater supply circuit is shorted high. |
| Nitrogen Oxides Sensor 3 Heater Control Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 heater supply circuit is shorted low. |
| Nitrogen Oxides Sensor 3 Heater Control Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Heater Control Circuit. The parameter displays Malfunction if the heater control circuit is open or shorted. |
| Nitrogen Oxides Sensor 3 Heater Control Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 heater supply circuit is shorted open. |
| Nitrogen Oxides Sensor 3 Heater Feedback Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 temperature circuit is shorted high. |
| Nitrogen Oxides Sensor 3 Heater Feedback Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 temperature circuit is shorted low. |
| Nitrogen Oxides Sensor 3 Heater Feedback Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Heater Feedback Circuit. The parameter displays Malfunction if the heater feedback circuit is open or shorted. |
| Nitrogen Oxides Sensor 3 Heater Feedback Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 temperature circuit is open. |
| Nitrogen Oxides Sensor 3 Heater Ground Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 heater feedback circuit is shorted high. |
| Nitrogen Oxides Sensor 3 Heater Ground Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 heater feedback circuit is shorted low. |
| Nitrogen Oxides Sensor 3 Heater Ground Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Heater Ground Circuit. The parameter displays Malfunction if the heater ground circuit is open or shorted. |
| Nitrogen Oxides Sensor 3 Heater Ground Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 heater feedback circuit is open. |
| Nitrogen Oxides Sensor 3 Heater Mode | — | Varies | This parameter displays the status of the nitrogen oxides sensor 3 heater. |
| Nitrogen Oxides Sensor 3 Heater Operation | — | Allowed / Not Allowed | This parameter displays the state of the nitrogen oxides sensor 3 heater operation. The parameter displays Allowed when commanded by the engine control module. |
| Nitrogen Oxides Sensor 3 Heater Resistance | — | Ω | This parameter displays the resistance value of the nitrogen oxides sensor 3 heater. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Nitrogen Oxides Sensor 3 Heater Supply Voltage Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Heater Supply Voltage Circuit. The parameter displays Malfunction if the heater supply voltage circuit is open or shorted. |
| Nitrogen Oxides Sensor 3 Nitrogen Oxides Concentration | — | ppm | This parameter displays the concentration of nitrogen oxides in the exhaust gas detected by nitrogen oxides sensor 3. |
| Nitrogen Oxides Sensor 3 Oxygen Concentration | — | % | This parameter displays the concentration of oxygen in the exhaust gas detected by nitrogen oxides sensor 3. |
| Nitrogen Oxides Sensor 3 Signal Circuit High Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 signal circuit is shorted high. |
| Nitrogen Oxides Sensor 3 Signal Circuit Low Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 signal circuit is shorted low. |
| Nitrogen Oxides Sensor 3 Signal Circuit Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Signal Circuit. The parameter displays Malfunction if the signal circuit is open or shorted. |
| Nitrogen Oxides Sensor 3 Signal Circuit Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the nitrogen oxides sensor 3 signal circuit is open. |
| Number of Completed Particulate Filter Regenerations | — | Counts | This parameter displays the number of successful particulate filter regenerations. |
| Number of DTC(s) | — | Counts | This parameter displays the number of emission related DTCs stored in the ECM. |
| Odometer When Engine Overspeed Detected | Engine Idling | km/miles | This parameter displays the kilometers or miles of the Odometer When Engine Overspeed Detected. |
| Output Shaft Speed Sensor | Engine Idling | RPM | This parameter displays the transmission output speed. |
| Oxygen Low Reference Circuit (Nitrogen Oxides Sensor) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Oxygen Low Reference Circuit. The parameter displays Malfunction if the low reference circuit is open or shorted. |
| Oxygen Low Reference Circuit (Nitrogen Oxides Sensor 2) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Oxygen Low Reference Circuit. The parameter displays Malfunction if the low reference circuit is open or shorted. |
| Oxygen Low Reference Circuit (Nitrogen Oxides Sensor 3) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Oxygen Low Reference Circuit. The parameter displays Malfunction if the low reference circuit is open or shorted. |
| Oxygen Low Reference Circuit (Nitrogen Oxides Sensor) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 1 is open. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Oxygen Low Reference Circuit (Nitrogen Oxides Sensor 2) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 2 is open. |
| Oxygen Low Reference Circuit (Nitrogen Oxides Sensor 3) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 3 is open. |
| Oxygen Low Reference Circuit High (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 1 is shorted high. |
| Oxygen Low Reference Circuit High (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 2 is shorted high. |
| Oxygen Low Reference Circuit High (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 3 is shorted high. |
| Oxygen Low Reference Circuit Low (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 1 is shorted low. |
| Oxygen Low Reference Circuit Low (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 2 is shorted low. |
| Oxygen Low Reference Circuit Low (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen low reference circuit for NOx sensor 3 is shorted low. |
| Oxygen Pump Current Control Circuit (Nitrogen Oxides Sensor) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Oxygen Pump Current Control Circuit. The parameter displays Malfunction if the pump current control circuit is open or shorted. |
| Oxygen Pump Current Control Circuit (Nitrogen Oxides Sensor 2) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Oxygen Pump Current Control Circuit. The parameter displays Malfunction if the pump current control circuit is open or shorted. |
| Oxygen Pump Current Control Circuit (Nitrogen Oxides Sensor 3) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Oxygen Pump Current Control Circuit. The parameter displays Malfunction if the pump current control circuit is open or shorted. |
| Oxygen Pump Current Control Circuit (Nitrogen Oxides Sensor) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 1 is open. |
| Oxygen Pump Current Control Circuit (Nitrogen Oxides Sensor 2) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 2 is open. |
| Oxygen Pump Current Control Circuit (Nitrogen Oxides Sensor 3) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 3 is open. |
| Oxygen Pump Current Control Circuit High (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 1 is shorted high. |
| Oxygen Pump Current Control Circuit High (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 2 is shorted high. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Oxygen Pump Current Control Circuit High (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 3 is shorted high. |
| Oxygen Pump Current Control Circuit Low (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 1 is shorted low. |
| Oxygen Pump Current Control Circuit Low (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 2 is shorted low. |
| Oxygen Pump Current Control Circuit Low (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen pump current control circuit for NOx sensor 3 is shorted low. |
| Oxygen Reference Circuit (Nitrogen Oxides Sensor) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 1 is open. |
| Oxygen Reference Circuit (Nitrogen Oxides Sensor 2) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 2 is open. |
| Oxygen Reference Circuit (Nitrogen Oxides Sensor 3) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 3 is open. |
| Oxygen Reference Circuit High (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 1 is shorted high. |
| Oxygen Reference Circuit High (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 2 is shorted high. |
| Oxygen Reference Circuit High (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 3 is shorted high. |
| Oxygen Reference Circuit Low (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 1 is shorted low. |
| Oxygen Reference Circuit Low (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 2 is shorted low. |
| Oxygen Reference Circuit Low (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the oxygen reference circuit for NOx sensor 3 is shorted low. |
| Oxygen Reference Voltage Circuit (Nitrogen Oxides Sensor) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Oxygen Reference Voltage Circuit. The parameter displays Malfunction if the reference voltage circuit is open or shorted. |
| Oxygen Reference Voltage Circuit (Nitrogen Oxides Sensor 2) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Oxygen Reference Voltage Circuit. The parameter displays Malfunction if the reference voltage circuit is open or shorted. |
| Oxygen Reference Voltage Circuit (Nitrogen Oxides Sensor 3) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Oxygen Reference Voltage Circuit. The parameter displays Malfunction if the reference voltage circuit is open or shorted. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Oxygen Sensor Signal Circuit (Nitrogen Oxides Sensor) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 1 Oxygen Sensor Signal Circuit. The parameter displays Malfunction if the sensor signal circuit is open or shorted. |
| Oxygen Sensor Signal Circuit (Nitrogen Oxides Sensor 2) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 2 Oxygen Sensor Signal Circuit. The parameter displays Malfunction if the sensor signal circuit is open or shorted. |
| Oxygen Signal Circuit (Nitrogen Oxides Sensor 3) Malfunction | — | Yes / No | This parameter displays the state of the Nitrogen Oxides (NOx) Sensor 3 Oxygen Signal (Lambda Linear Signal) Circuit. The parameter displays Malfunction if the signal circuit is open or shorted. |
| Oxygen Signal Circuit (Nitrogen Oxides Sensor) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 2 is open. |
| Oxygen Signal Circuit (Nitrogen Oxides Sensor 2) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 2 is open. |
| Oxygen Signal Circuit (Nitrogen Oxides Sensor 3) Open Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 3 is open. |
| Oxygen Signal Circuit High (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 1 is shorted high. |
| Oxygen Signal Circuit High (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 2 is shorted high. |
| Oxygen Signal Circuit High (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 3 is shorted high. |
| Oxygen Signal Circuit Low (Nitrogen Oxides Sensor) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 1 is shorted low. |
| Oxygen Signal Circuit Low (Nitrogen Oxides Sensor 2) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 2 is shorted low. |
| Oxygen Signal Circuit Low (Nitrogen Oxides Sensor 3) Test Status | — | Okay / Malfunction / Not Run | The parameter displays Malfunction if the Oxygen Signal (Lambda Linear Signal) circuit for NOx sensor 3 is shorted low. |
| PTO | — | Active / Inactive | This parameter contains an indication that power take off (PTO) is active |
| PTO Engine Shutdown Signal | — | Yes / No | This parameter contains several signals associated with the status of the power take off (PTO) and fast idle systems. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Park/Neutral Position Switch | — | Park/Neutral/In Gear | This parameter indicates the range selection of the automatic transmission as calculated by the control module based on input from the park/neutral position (PNP) switch. The scan tool will display, In Gear, Park, or Neutral depending on the PNP switch position. |
| Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared | — | Not Supported / Complete / Incomplete | This parameter displays the status of the Particulate Filter monitor, the parameter displays Complete when the monitor has completed since DTCs Cleared. |
| Particulate Filter Monitor - This Ignition Cycle | — | Disabled / Enabled / Complete | This parameter displays Complete if completion status during the current driving / monitoring cycle of the Particulate Filter Monitor is complete. |
| Particulate Filter Pressure | — | kPa (PSI) | This parameter contains the diesel particulate filter pressure calculated as the difference between ambient air pressure (barometric pressure) and the exhaust gas pressure |
| Particulate Filter Pressure Sensor | — | Volts | This parameter will display the voltage differential between the front and rear pressures at the DPF as calculated by the ECM. This will be displayed in volts. As the DPF becomes restricted the differential pressure increases and the voltage will get higher. |
| Particulate Filter Pressure Sensor Circuit High Malfunction | — | Yes / No | This parameter will display Yes if the particulate filter pressure sensor circuit is malfunctioning. |
| Particulate Filter Regeneration Inhibit - Battery Voltage Low | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to battery in under voltage conditions. |
| Particulate Filter Regeneration Inhibit - Catalytic Converter Inlet Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel oxidation catalyst inlet temperature too high. |
| Particulate Filter Regeneration Inhibit - Catalytic Converter Outlet Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel oxidation catalyst outlet temperature too high. |
| Particulate Filter Regeneration Inhibit - Deceleration Fuel Cut-Off | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to extended engine cutoff. |
| Particulate Filter Regeneration Inhibit - Engine Coolant Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to engine coolant temperature too high. |
| Particulate Filter Regeneration Inhibit - Engine Off | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to engine stopped. |
| Particulate Filter Regeneration Inhibit - Excessive Idle Time | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to extended engine low-idle. |
| Particulate Filter Regeneration Inhibit - Fuel Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to fuel temperature too high. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Particulate Filter Regeneration Inhibit - Insufficient Time Since Last Regeneration Attempt | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to regeneration time lock. |
| Particulate Filter Regeneration Inhibit - Low Fuel Level | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to too low fuel tank level. |
| Particulate Filter Regeneration Inhibit - Maximum Post-Fuel Injection Time Exceeded | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to post-injection maximum enabling time expired. |
| Particulate Filter Regeneration Inhibit - Maximum Steady State Time Exceeded | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel particulate filter regeneration steady-state maximum entering time expired. |
| Particulate Filter Regeneration Inhibit - Maximum Time Exceeded | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel particulate regeneration duration too long. |
| Particulate Filter Regeneration Inhibit - Nitrogen Oxides Catalytic Converter Outlet Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to Selective Catalytic Reduction (SCR) outlet temperature too high. |
| Particulate Filter Regeneration Inhibit - Particulate Filter Inlet Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel particulate filter inlet temperature too high. |
| Particulate Filter Regeneration Inhibit - Particulate Filter Outlet Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel particulate filter outlet temperature too high. |
| Particulate Filter Regeneration Inhibit - Particulate Matter Sensor Regeneration Active | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to particulate matter sensor regeneration. |
| Particulate Filter Regeneration Inhibit - Power Takeoff is Enabled | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to deactivated by Power Takeoff (PTO). |
| Particulate Filter Regeneration Inhibit - Reductant Injector Cooling Disabled | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to reductant injector (DEFMV) cooling not possible. |
| Particulate Filter Regeneration Inhibit - Regeneration Already Completed | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to diesel particulate filter regeneration completed. |
| Particulate Filter Regeneration Inhibit - System Malfunction | — | Yes / No | This parameter displays Yes when regeneration is inhibited for a system fault or a DTC present. |
| Particulate Filter Regeneration Inhibit - Turbocharger Inlet Temperature Too High | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to turbo charger inlet temperature too high. |
| Particulate Filter Regeneration Inhibit - Vehicle Speed or Engine Load Too Low | — | Yes / No | This parameter displays Yes when regeneration is inhibited due to vehicle speed below a threshold or the engine load below a minimum. |
| Particulate Filter Regeneration Reason | — | Varies | This parameter displays the regeneration demand and completion status. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Particulate Filter Regeneration Status | — | Not Required / Active—Varied Stages / Inhibited | This parameter displays the status of the Diesel Particulate regeneration activity. |
| Particulate Filter Service Regeneration Status | — | Not Requested / Active / Completed / Failed | This parameter displays the status of the Diesel Particulate Service Regeneration procedure. |
| Particulate Filter Soot Accumulation Calculated From Other Engine Data | — | % | This parameter displays the estimated percentage of soot in the Diesel Particle Filter using the available engine data. |
| Particulate Filter Soot Accumulation Calculated From Particulate Filter Pressure Sensor | — | % | This parameter displays the estimated percentage of soot in the Diesel Particle Filter using the particulate filter pressure sensor. |
| Particulate Matter Sensor | — | Mg/m3 | This parameter displays the mass concentration of exhaust particulate matter measured by the particulate matter sensor. |
| Particulate Matter Sensor | — | uA | This parameter displays the measured current from the sensing element of the particulate matter sensor. |
| Particulate Matter Sensor Control Unit Communication Status | — | Ready | This parameter displays the communication status of the particulate matter sensor control unit. |
| Particulate Matter Sensor Identifier | — | # | This parameter displays the value sent from the sensor control unit to engine control module to provide sensor build information in order for the software to compensate for sensor variations. |
| Particulate Matter Sensor Measurement | — | Active | This parameter displays the status of the particular matter sensor. |
| Particulate Matter Sensor Operation | — | Allowed | This parameter displays if the exhaust temperature dew point is reached to allow the particulate matter sensor to operate. |
| Particulate Matter Sensor Regeneration | — | Inactive | This parameter displays Active when the particulate matter sensor is regenerating. |
| Particulate Matter Sensor Soot Accumulation | — | % | This parameter displays Particulate Matter (PM) Sensor normalized output in percent. |
| Particulate Matter Sensor Status | — | Ready | This parameter displays the status of the particulate matter sensor. |
| Particulate Matter Sensor Temperature | — | °C (°F) | This parameter displays the current temperature of the particulate matter sensor in Celsius and Fahrenheit. |
| Pilot Injection | — | Inactive | Pilot Injection Active indicates that pilot injections are active. |
| Positive Crankcase Ventilation Heater Command | — | On/Off | This parameter displays the current command of the positive crankcase ventilation heater. |
| Positive Crankcase Ventilation Heater Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the positive crankcase heater control circuit. The parameter displays Malfunction if the positive crankcase heater control circuit is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Positive Crankcase Ventilation Heater Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the positive crankcase heater control circuit. The parameter displays Malfunction if the positive crankcase heater control circuit is shorted to ground. |
| Positive Crankcase Ventilation Heater Control Circuit Open Test Status | — | OK | This parameter displays the state of the positive crankcase heater control circuit. The parameter displays Malfunction if the positive crankcase heater control circuit is open. |
| Post Injection | — | Inactive | Post Injection Active indicates that post injections is active |
| Power Mode | — | Off | This parameter displays the state of the System Power Mode. This signal is based upon the state of the system power mode received over serial communication from the vehicle electronics. |
| Radiator Coolant Temperature Sensor | — | °C (°F) | This parameter displays the radiator coolant temperature measured by a sensor located in the coolant outlet of the radiator. |
| Reduced Engine Power | — | Inactive | This parameter will display the fuel system status as commanded by the ECM. |
| Reduced Engine Power History | — | Varies | This parameter displays the last reason that the engine control module has illuminated the Reduced Engine Power (REP) indication. |
| Reductant Absolute Pressure | — | kPa | This parameter displays the absolute pressure of the reductant. |
| Reductant Control Module Sensor Communication Ground Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant control module sensor/switch communication ground circuit A is faulted high. |
| Reductant Control Module Sensor Reference Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant control module sensor/switch communication 5V supply circuit A is faulted high. |
| Reductant Control Module Sensor Reference Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant control module sensor/switch communication 5V supply circuit A is faulted low. |
| Reductant Control Module Sensor Serial Communication Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant control module sensor/switch communication circuit A is faulted high. |
| Reductant Control Module Sensor Serial Communication Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant control module sensor/switch communication circuit A is faulted low. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Control Module Sensor Serial Communication Circuit Performance Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant control module sensor/switch communication circuit A faulty performance. |
| Reductant Consumption During Drive Cycle | — | L (gal) | This parameter displays the amount of reductant (DEF) used during the current drive cycle. |
| Reductant Fluid Quality Gross Error Test | — | Complete / Incomplete | This parameter displays the test completion state of the Selective Catalyst Reduction (SCR) gross error quality check procedure. |
| Reductant Fluid Quality Gross Error Test Diagnostic | — | Active / Inactive | This parameter displays the monitoring status of the Selective Catalyst Reduction (SCR) gross error quality check procedure. |
| Reductant Fluid Quality Gross Error Test Diagnostics | — | Varies | This parameter displays the phases of the Selective Catalyst Reduction (SCR) gross error quality check procedure. |
| Reductant Fluid Quality Gross Error Test Performed This Ignition Cycle | — | Yes / No | This parameter displays the test completion state of the Selective Catalyst Reduction (SCR) gross error quality check procedure during the most recent ignition cycle. |
| Reductant Fluid Quality Gross Error Test Requested Warning | — | Yes / No | This parameter displays the warning requested as a result of the of the Selective Catalyst Reduction (SCR) gross error quality check procedure. |
| Reductant Fluid Quality Small Error Test | — | Complete / Incomplete | This parameter displays the test completion state of the Selective Catalyst Reduction (SCR) small error quality check procedure. |
| Reductant Fluid Quality Small Error Test Diagnostic | — | Active / Inactive | This parameter displays the monitoring status of the Selective Catalyst Reduction (SCR) small error quality check procedure. |
| Reductant Fluid Quality Small Error Test Performed This Ignition Cycle | — | Yes / No | This parameter displays the test completion state of the Selective Catalyst Reduction (SCR) small error quality check procedure during the most recent ignition cycle. |
| Reductant Fluid Quality Test | — | Completed with success | This parameter displays the phases of the SCR (Selective Catalyst Reduction) service quality check procedure. |
| Reductant Fluid Quality Test Diagnostic | — | Varies | This parameter displays the phases of the Selective Catalyst Reduction (SCR) service quality check procedure. |
| Reductant Fluid Quality Warning Indicator Command | — | None | This parameter displays the control module Nitrogen Oxides (NOx) reductant quality warning indicator command. |
| Reductant Heater Command | — | On / Off | This parameter displays the commanded state of the Nitrogen Oxides (NOx) reductant heater 1 output (the output is considered to be commanded On if the duty cycle is not zero) |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Heater Control Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank heater circuit is shorted to voltage. |
| Reductant Heater Control Circuit High Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the low-side control circuit for Nitrogen Oxides (NOx) reductant tank heater 1 is shorted to voltage. |
| Reductant Heater Control Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank heater circuit is shorted to ground. |
| Reductant Heater Control Circuit Low Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the low-side control circuit for Nitrogen Oxides (NOx) reductant heater 1 is shorted to ground. |
| Reductant Heater Control Circuit Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank heater circuit is open. |
| Reductant Heater Control Circuit Open Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the low-side control circuit for Nitrogen Oxides (NOx) reductant heater 1 is open. |
| Reductant Heater Current | — | Amps | This parameter displays the Nitrogen Oxides (NOx) reductant heater 1 current. |
| Reductant Heater Driver Temperature Too High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank heater driver temperature is too high. |
| Reductant Heater Feedback Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank heater supply undervoltage fault check fails. |
| Reductant Heater High Control Circuit High Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the high-side circuit for Nitrogen Oxides (NOx) reductant heater 1 is shorted to voltage. |
| Reductant Heater High Control Circuit Low Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the high-side circuit for Nitrogen Oxides (NOx) reductant heater 1 is shorted to ground. |
| Reductant Heater Performance Malfunction | — | Yes / No | The parameter displays Yes if reductant tank heater fails a plausibility check. |
| Reductant Heater 2 Command | — | On / Off | This parameter displays the commanded state of the Nitrogen Oxides (NOx) reductant heater 2 output (the output is considered to be commanded On if the duty cycle is not zero) |
| Reductant Heater 2 Control Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant line heater circuit is shorted to voltage. |
| Reductant Heater 2 Control Circuit High Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the low-side control circuit for Nitrogen Oxides (NOx) reductant heater 2 is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Heater 2 Control Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant line heater circuit is shorted to ground. |
| Reductant Heater 2 Control Circuit Low Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the low-side control circuit for Nitrogen Oxides (NOx) reductant heater 2 is shorted to ground. |
| Reductant Heater 2 Control Circuit Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant line heater circuit is open. |
| Reductant Heater 2 Control Circuit Open Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the low-side control circuit for Nitrogen Oxides (NOx) reductant heater 2 is open. |
| Reductant Heater 2 Current | — | Amps | This parameter displays the Nitrogen Oxides (NOx) reductant heater 2 current. |
| Reductant Heater 2 Driver Temperature Too High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant line heater driver temperature is too high. |
| Reductant Heater 2 Feedback Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant line heater supply undervoltage fault check fails. |
| Reductant Heater 2 High Control Circuit High Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the high-side control circuit for Nitrogen Oxides (NOx) reductant heater 2 is shorted to voltage. |
| Reductant Heater 2 High Control Circuit Low Test Status | — | OK, Malfunction, Not Run | The parameter displays Malfunction if the high-side control circuit for Nitrogen Oxides (NOx) reductant heater 2 is shorted to ground. |
| Reductant Heater 2 Performance Malfunction | — | Yes / No | The parameter displays Yes if reductant line heater fails a plausibility check. |
| Reductant Heater Request | — | On / Off | This parameter displays the commanded state of the Reductant Heater 1. The Reductant Heater 1 should be On when the scan tool indicates the Reductant Heater 1 Command is ON. |
| Reductant Heater 2 Request | — | On / Off | This parameter displays the commanded state of the Reductant Heater 2. The Reductant Heater 2 should be On when the scan tool indicates the Reductant Heater 2 Command is ON. |
| Reductant Heater 3 Request | — | On / Off | This parameter displays the commanded state of the Reductant Heater 3. The Reductant Heater 3 should be On when the scan tool indicates the Reductant Heater 3 Command is ON. |
| Reductant Heater Supply Voltage | — | Okay / Out of Range | This parameter displays Out of Range if reductant tank/pipe heaters voltage is out of range. |
| Reductant High Pressure Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pressure control governor deviation is high. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Low Pressure Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pressure control governor deviation is low. |
| Reductant Injection Control Extreme Pressure Test | — | Passed | This parameter displays the test status of the NOx reductant dosing system extreme pressure test. |
| Reductant Injection Control Low Pressure Test | — | Passed | This parameter displays the test status of the NOx reductant dosing system low pressure test. |
| Reductant Injection Control Overpressure Test Status | — | Passed | This parameter displays the test status of the NOx reductant closing system overpressure test. |
| Reductant Injection Control Pressure Build-Up Test Status | — | Passed | This parameter displays the test status of the NOx reductant dosing system test. |
| Reductant Injection Inhibit Reason | — | Varies | This parameter displays the reason why the Nitrogen Oxides (NOx) Reductant system has been inhibited from operation. |
| Reductant Injection Inhibit Requested | — | Yes / No | This parameter displays Yes if the Nitrogen Oxides (NOx) Reductant system has been inhibited from operation. |
| Reductant Injection Quantity Test Abort Reason | — | Varies | This parameter displays the reductant injector quantity flow test abort reason. |
| Reductant Injection Quantity Test Status | — | Varies | This parameter displays the reductant injector quantity flow test status. |
| Reductant Injector Command | — | % | This parameter displays the commanded duty cycle for the NOx reductant dosing valve output. |
| Reductant Injector Control Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant injector low-side control circuit is shorted to voltage. |
| Reductant Injector Control Circuit High Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 1 control circuit. The parameter displays Malfunction if the low-side control circuit is shorted to voltage. |
| Reductant Injector Control Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant injector low-side control circuit is shorted to ground. |
| Reductant Injector Control Circuit Low Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 1 control circuit. The parameter displays Malfunction if the low-side control circuit is shorted to ground. |
| Reductant Injector Control Circuit Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant injector control circuit is open. |
| Reductant Injector Control Circuit Open Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 2 control circuit. The parameter displays Malfunction if the low-side control circuit is open. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Injector Control Circuit Status | — | No Malfunction Present | This parameter displays the status of the Reductant Injection Control Circuit output. |
| Reductant Injector High Control Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant injector high-side control circuit is shorted to voltage. |
| Reductant Injector High Control Circuit High Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 1 high-side control circuit. The parameter displays Malfunction if the high-side control circuit is shorted to voltage. |
| Reductant Injector High Control Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant injector high-side control circuit is shorted to ground. |
| Reductant Injector High Control Circuit Low Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 1 high-side control circuit. The parameter displays Malfunction if the high-side control circuit is shorted to ground. |
| Reductant Injector Performance Malfunction | — | Yes / No | The parameter displays Yes if a Nitrogen Oxides (NOx) reductant injector circuit is out of range. |
| Reductant Injector 2 Control Circuit High Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 2 control circuit. The parameter displays Malfunction if the low-side control circuit is shorted to voltage. |
| Reductant Injector 2 Control Circuit Low Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 2 control circuit. The parameter displays Malfunction if the low-side control circuit is shorted to ground. |
| Reductant Injector 2 Control Circuit Open Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 2 control circuit. The parameter displays Malfunction if the low-side control circuit is open. |
| Reductant Injector 2 High Control Circuit High Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 2 high-side control circuit. The parameter displays Malfunction if the high-side control circuit is shorted to voltage. |
| Reductant Injector 2 High Control Circuit Low Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the reductant injector 2 high-side control circuit. The parameter displays Malfunction if the high-side control circuit is shorted to ground. |
| Reductant Injector 2 Quantity Test Abort Reason | — | Varies | This parameter displays the reductant injector 2 quantity flow test abort reason. |
| Reductant Injector 2 Quantity Test Status | — | Varies | This parameter displays the reductant injector 2 quantity flow test status. |
| Reductant Level | — | % | This parameter displays the total Reductant level as a percentage of the rated capacity of the tank. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Level Sensor 1 | — | Inactive | This parameter displays the individual Reductant Level Switch states. Active indicates that the level switch is detecting fluid in regards to its position in the reductant reservoir. |
| Reductant Level Sensor Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant level sensor circuit voltage is low. |
| Reductant Level Sensor 1 Circuit Status | — | No Malfunction | This parameter displays the circuit status of each reductant level sensor. |
| Reductant Level Sensor 2 | — | Inactive | This parameter displays the individual Reductant Level Switch states. Active indicates that the level switch is detecting fluid in regards to its position in the reductant reservoir. |
| Reductant Level Sensor 2 Circuit Status | — | No Malfunction | This parameter displays the circuit status of each reductant level sensor. |
| Reductant Level Sensor 3 | — | Inactive | This parameter displays the individual Reductant Level Switch states. Active indicates that the level switch is detecting fluid in regards to its position in the reductant reservoir. |
| Reductant Level Sensor 3 Circuit Status | — | No Malfunction | This parameter displays the circuit status of each reductant level sensor. |
| Reductant Level Warning Indicator Command | — | None | This parameter displays the engine control module (ECM) requested reductant fluid level warning indicator state. |
| Reductant Pressure | — | kPa (PSI) | This parameter displays the engine Reductant pressure from the sensor. |
| Reductant Pressure Sensor | — | Volts | This parameter contains the reductant pressure analog input as a percentage of its reference voltage. |
| Reductant Pressure Sensor Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank pressure sensor signal circuit is shorted high. |
| Reductant Pressure Sensor Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank pressure sensor signal circuit is shorted low. |
| Reductant Pressure Sensor Performance Malfunction | — | Yes / No | The parameter displays Yes if Nitrogen Oxides (NOx) reductant pressure sensor fails a plausibility check. |
| Reductant Pump Command | — | % | This parameter displays the commanded duty cycle for the Nitrogen Oxides (NOx) reductant pump. |
| Reductant Pump Control Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump control circuit is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Pump Control Circuit High Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump motor phase control circuit is shorted high. |
| Reductant Pump Control Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump control circuit is shorted to ground. |
| Reductant Pump Control Circuit Low Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump motor phase control circuit is shorted to ground. |
| Reductant Pump Control Circuit Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump control circuit is open. |
| Reductant Pump Control Circuit Open Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump motor phase control circuit is open. |
| Reductant Pump Control Circuit Overcurrent Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump current is too high. |
| Reductant Pump Control Circuit Shorted Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump motor circuits are shorted. |
| Reductant Pump Control Circuit Shorted Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if the Nitrogen Oxides (NOx) reductant pump motor phase control circuits are shorted. |
| Reductant Pump Current Too High Malfunction | — | Yes / No | The parameter displays Malfunction if the Nitrogen Oxides (NOx) reductant pump motor current is too high. |
| Reductant Pump Driver Temperature Too High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump motor temperature is too high. |
| Reductant Pump Heater Command | — | On / Off | This parameter displays the commanded state of the Nitrogen Oxides (NOx) reductant pump heater. |
| Reductant Pump Driver Temperature Too High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump motor temperature is too high. |
| Reductant Pump Low Speed Malfunction | — | Yes / No | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump motor speed is low or rotor is stalled. |
| Reductant Pump Output Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump output circuit is shorted to voltage. |
| Reductant Pump Output Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump output circuit is shorted to ground. |
| Reductant Pump Output Circuit Low Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump motor output circuit is shorted to ground. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Pump Output Circuit Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant pump output circuit is open. |
| Reductant Pump Output Circuit Open Test Status | — | Okay, Malfunction, Not Run | The parameter displays Malfunction if a Nitrogen Oxides (NOx) reductant pump motor phase control circuit is open. |
| Reductant Pump Overcurrent | — | Yes / No | The parameter displays Yes if a Nitrogen Oxides (NOx) reductant pump current is too high. |
| Reductant Pump Speed | — | RPM | This parameter contains the actual reductant pump motor speed. |
| Reductant Pump Voltage Performance Malfunction | — | Yes / No | The parameter displays Yes if a Nitrogen Oxides (NOx) reductant pump motor and heater drivers supply voltage is out of range. |
| Reductant Purge Solenoid Valve Command | — | On/Off | This parameter displays the commanded state of the reductant line purge solenoid valve. The scan tool displays On when the reductant line purge solenoid valve is commanded ON. |
| Reductant Purge Solenoid Valve Control Circuit Status | — | No Malfunction Present | This parameter displays the status of the Reductant Purge Solenoid Valve Control Circuit. |
| Reductant Quality Sensor | — | % | This parameter displays the reductant (DEF) concentration in percent. |
| Reductant Range | — | km (miles) | This parameter displays the remaining distance that can be driven before the reductant tank needs to be refilled. |
| Reductant Sensor Module Supply Voltage | — | Okay / Out of Range | This parameter displays Out of Range if Selective Catalyst Reduction (SCR) control module supply voltage is out of range. |
| Reductant System Adaption | — | Active / Inactive | This parameter displays the Active if the Selective Catalyst Reduction (SCR) fast adaptation is active and running. |
| Reductant System Adaption Requested Warning | — | Yes / No | This parameter displays the Yes if the Selective Catalyst Reduction (SCR) warning strategy activation is requested. |
| Reductant System Adaption Steps | — | Counts | This parameter displays the count of the Selective Catalyst Reduction (SCR) fast adaptation steps. |
| Reductant System Command | — | % | This parameter displays the commanded reductant (DEF) dosing of the Selective Catalyst Reduction (SCR) system. |
| Reductant System Malfunction Warning Indicator Command | — | None | This parameter displays the Nitrogen Oxides (NOx) reductant system malfunction warning. |
| Reductant System Malfunction Warning Service Bay Test | — | Varies | This parameter displays a malfunction warning for the reductant system during a service bay test. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant System Malfunction Warning Service Bay Test Abort Reason | — | Varies | This parameter displays status of a malfunction warning abort from the reductant system during a service bay test. |
| Reductant System Malfunction Warning Service Bay Test Status | — | Varies | This parameter displays status of a malfunction warning from the reductant system during a service bay test. |
| Reductant System Malfunction Warning Service Bay Test Calculated Nitrogen Oxides Emissions Monitor Efficiency | — | % | This parameter displays Selective Catalyst Reduction (SCR) estimated average efficiency for the reductant system during a service bay test. |
| Reductant System Malfunction Warning Service Bay Test Nitrogen Oxides Emissions Monitor Efficiency | — | % | This parameter displays Selective Catalyst Reduction (SCR) measured average efficiency for the reductant system during a service bay test. |
| Reductant System Priming Test Status | — | Varies | This parameter displays Selective Catalyst Reduction (SCR) system priming and leak test status. |
| Reductant System Tamper Warning Service Bay Test Abort Reason | — | Not Requested, In Progress, Passed, Failed, Interrupted | This parameter contains the status of the SCR Tamper/No Tamper service bay test procedure. |
| Reductant System Tamper Warning Service Bay Test Result | — | Reductant System Tamper Warning Service Bay Test Result | This parameter holds the most recent abort reason for the SCR Tamper/No Tamper service bay test algorithm |
| Reductant Tank Temperature Sensor | — | ºC (ºF) | This parameter contains the undefaulted reductant temperature measured by a sensor that is located within the holding tank. |
| Reductant Tank Temperature Sensor Circuit Erratic Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank temperature sensor self correlated fault check failed. |
| Reductant Tank Temperature Sensor Circuit High Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank temperature sensor circuit is shorted high. |
| Reductant Tank Temperature Sensor Circuit Low Malfunction | — | Yes / No | The parameter displays Yes if the Nitrogen Oxides (NOx) reductant tank temperature sensor circuit is shorted low. |
| Reductant Tank Status | — | Full / OK / Warning / Empty | The parameter displays the state of Nitrogen Oxides (NOx) reductant holding tank. |
| Reductant Tank Temperature Sensor 2 | — | ºC (ºF) | This parameter contains the undefaulted reductant (DEF) temperature measured by a sensor that is part of the reductant quality sensor |
| Reductant Tank Temperature Sensor 2 Circuit Erratic Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor 2 Circuit High Voltage Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Reductant Tank Temperature Sensor 2 Circuit Low Voltage Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor 2 Circuit Performance Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor Circuit Erratic Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor Circuit High Voltage Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Tank Temperature Sensor Circuit Low Voltage Test Status | — | Yes / No | This parameter contains the all monitors that trigger the SCR Tamper/Not Tamper Warning Strategy. |
| Reductant Temperature | — | °C (°F) | This parameter displays the Reductant temperature measured by a sensor that is located within the holding tank. |
| Remaining Reductant in Tank | — | g | This parameter displays the current reductant remaining in the holding tank. |
| Redundant Odometer Memory | — | Present/Not Present | This parameter displays if there is a reductant odometer reading present in the control module. |
| Remaining Fuel in Tank | — | % | This parameter displays the total fuel level as a percentage of the rated capacity of the fuel tank. |
| Remaining Fuel in Tank | — | Liters | This parameter displays the actual total fuel volume contained in the fuel tank. |
| Remote Vehicle Start Disable History 1–8 | — | Reason for RVS Disable | These parameters display the last eight reasons the control module disabled remote vehicle start (RVS). |
| Remote Vehicle Start Request Signal | — | Off | Remote Vehicle Start Request indicates the state of the request received over serial communication from the remote vehicle start (RVS) system to start the vehicle in remote mode. |
| Replicated Transmission OSS Signal | — | RPM | This parameter displays the Replicated Transmission Output Speed (Replicated TOS) received from the Transmission Control Module. |
| Sensor Reference Circuit Status<br>Sensor Reference Circuit Status 2–4 | -— | Okay | This parameter will display OK if the circuit is good or Malfunction if a short to ground, short to B+ or open circuit is present. |
| Sensor Reference<br>Sensor Reference 2–5 | Ignition/Vehicle » On | 5 V | This parameter displays the voltage sensed on the 5 V reference circuits at the control module. The scan tool will display a higher value at higher voltage. The scan tool will display a lower value at lower voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Sensor Supply Voltage Relay Command | — | On / Off | This parameter contains the exhaust gas recirculation cooler temperature at power-up (Run/ Crank transition from low to high) from a sensor that is located before the inlet of the exhaust gas recirculation cooler heat exchanger. |
| Soot Mass Correction | — | # | This parameter displays the soot mass correction value caused by Continuous Regenerating Trap (CRT) effect. |
| Specific Humidity | — | % | This parameter displays the current specific humidity in percentage. |
| Start-Up Charge Air Cooler Temperature | — | °C (°F) | This parameter displays the current start-up charge air cooler temperature. |
| Start-Up Charge Air Cooler Inlet Temperature | — | ºC (ºF) | This parameter contains the charge air temperature (measured by a sensor that is located first in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system.) recorded at power-up. |
| Start-Up Charge Air Cooler Outlet Temperature | — | ºC (ºF) | This parameter contains the charge air temperature (measured by a sensor that is located second in the charge air cooler stream in relationship to any other charge air cooler temperature sensors in the system.) recorded at power-up. |
| Start-Up Temperature EGR Cooler Temperature Sensor 1 | — | ºC (ºF) | This parameter contains the exhaust gas recirculation cooler temperature at power-up (Run/ Crank transition from low to high) from a sensor that is located before the inlet of the exhaust gas recirculation cooler heat exchanger. |
| Start-Up Temperature EGR Cooler Temperature Sensor 2 | — | ºC (ºF) | This parameter contains the exhaust gas recirculation cooler temperature at power-up (Run/ Crank transition from low to high) from a sensor that is located on the outlet of the exhaust gas recirculation cooler heat exchanger. |
| Start-Up ECT | — | °C (°F) | This parameter Indicates the engine coolant temperature at engine start up as calculated by the control module based on the signal from the ECT sensor. The scan tool will display a higher value on a warmer engine, and a lower value on a colder engine. |
| Start-Up Exhaust Gas Temperature Sensor 1, 2, 3, or 4 | — | °C (°F) | This parameter displays the current start-up exhaust gas temperature for sensor 4. |
| Start-Up Fuel Temperature | — | °C (°F) | This parameter Indicates the fuel temperature at engine start up as calculated by the control module based on the signal from the fuel temperature sensor. The scan tool will display a higher value on a warmer fuel, and a lower value on a colder fuel. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Start-Up IAT Sensor 1–3 | — | °C (°F) | This parameter indicates the intake air temperature at engine start up as calculated by the control module based on the signal from the IAT sensor. The scan tool will display a higher value during warmer under hood temperatures, and a lower value during colder under hood temperatures. |
| Start-Up Particulate Matter Sensor Temperature | — | °C (°F) | This parameter displays the start-up particulate matter temperature in Celsius and Fahrenheit. |
| Starter Relay Command | — | Off | The scan tool displays ON/OFF. The scan tool displays Off until the ignition is placed into the CRANK position, then it reads On. |
| Starter Relay Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to voltage. This parameter may not change if the scan tool is used to command the relay control circuit ON. |
| Starter Relay Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is shorted to ground. This parameter may not change if the scan tool is used to command the relay control circuit ON. |
| Starter Relay Control Circuit Open Test Status | — | OK | This parameter displays the state of the starter relay control circuit. The parameter displays Malfunction if the starter relay control circuit is open. This parameter may not change if the scan tool is used to command the relay control circuit ON. |
| Starter Motor Relay Control Circuit High Voltage Test Status | — | OK, Malfunction, Not Run | This parameter contains the commanded state of the starter relay output along with the status of its associated short to ground, open circuit, and short to power tests |
| Starter Motor Relay Control Circuit Low Voltage Test Status | — | OK, Malfunction, Not Run | This parameter contains the commanded state of the starter relay output along with the status of its associated short to ground, open circuit, and short to power tests |
| Starter Motor Relay Control Circuit Open Test Status | — | OK, Malfunction, Not Run | This parameter contains the commanded state of the starter relay output along with the status of its associated short to ground, open circuit, and short to power tests |
| TCC Control | — | Disengaged | This parameter displays the current state of the TCC. |
| Torque Delivered Signal | — | N•m | This parameter displays the engine torque based upon the airflow through the engine and the torque losses due to fuel shutoff. Since this is a steady state engine torque, it does not include the inertial component of engine torque. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Total Fuel Consumed | — | Liters | This parameter displays the fuel consumed in the current drive cycle in liters. |
| Total Misfire | — | Counts | This parameter displays the total number of cylinder firing events that the control module detected as misfires for the last 200 crankshaft revolution sample period. |
| Tow/Haul Mode | — | Active / Inactive / Not Available | This parameter contains signals associated with Tow Haul Mode as selected by the driver mode determination (DMD) switches |
| Traction Control Status | — | Inactive | This parameter displays Active if the electronic brake and traction control module (EBTCM) is commanding traction control. |
| Traction Control Torque Delivered Signal | — | % | This parameter displays the estimated engine torque delivered by the powertrain, as a percentage of maximum engine torque that is provided to the ABS/TCS module. |
| Traction Control Torque Request Signal | — | % | This parameter displays the engine torque requested by the traction control system, as a percentage of maximum engine torque. |
| Transmission Inhibiting Engine Cranking | — | Yes / No | This parameter contains several signals associated with the status of the power mode and starter systems |
| Turbocharger Control Module Supply Voltage | — | Volts | This parameter contains the undefaulted voltage applied to the turbocharger actuator power supply pins. |
| Turbocharger Vane Learned Closed Position | — | % | This is the learned position of the blades that control the airflow into the turbo charger. This parameter displays the learned closed position. |
| Turbocharger Van Learned Closed Position | — | Volts | This parameter displays the minimum position learned for Turbo Charger Vane position sensor when the Turbo Charger Vanes are closed. |
| Turbocharger Vane Learned Open Position | — | % | This is the learned position of blades that control the airflow into the turbo charger. This parameter displays the learned open position. |
| Turbocharger Vane Learned Open Position | — | Volts | This parameter displays the minimum position learned for Turbo Charger Vane position sensor when the Turbo Charger Vanes are open. |
| Turbocharger Vane Position Learn Status | — | Learned | This parameter indicates the status of the control module in learning the turbocharger vane position. The scan tool will display No if the turbocharger vane position has not been learned since the last DTC clear. |
| Turbocharger Vane Position Initial Learned Value | — | Counts | This parameter contains the end of line (EOL) learn span in commutation counts |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Turbocharger Vane Position Learned Value | — | Counts | This parameter contains the full span learn (FSL) in commutation counts that occurs at ignition off. |
| Turbocharger Vane Position Sensor | — | % | This parameter displays the current commanded state of the turbocharger vane position control solenoid valve by the control module. The scan tool will display a higher value as the solenoid is commanded open. The scan tool will display a lower value as the solenoid is commanded closed. |
| Turbocharger Vane Position Sensor | — | Volts | This parameter displays the voltage signal sent to the control module from the sensor. The scan tool will display a higher value as the solenoid is commanded open. The scan tool will display a lower value as the solenoid is commanded closed. |
| Turbocharger Vane Position Solenoid Valve Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is shorted to voltage. |
| Turbocharger Vane Position Solenoid Valve Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is shorted to ground. |
| Turbocharger Vane Position Solenoid Valve Circuit Open Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is open. |
| Turbocharger Vane Position Solenoid Valve Circuit Shorted Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve Circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve circuit is shorted. |
| Turbocharger Vane Position Solenoid Valve Command | — | % | This parameter displays the commanded duty cycle for the solenoid on variable geometry turbocharger. |
| Turbocharger Vane Position Solenoid Valve Control Circuit Command | — | Off | This parameter displays the commanded state of the turbocharger solenoid valve. |
| Turbocharger Vane Position Solenoid Valve Control Driver Overtemperature | — | No | This parameter displays the state of the turbocharger vane position solenoid valve control driver. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit Command | — | Off | This parameter displays the commanded state of the turbocharger solenoid valve high control circuit. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Turbocharger Vane Position Solenoid Valve High Control Circuit High Voltage Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve high control circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve high control circuit is shorted to voltage. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit Low Voltage Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve high control circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve high control circuit is shorted to ground. |
| Turbocharger Vane Position Solenoid Valve High Control Circuit Open Test Status | — | OK | This parameter displays the state of the Turbocharger Vane Position Solenoid Valve high control circuit. The parameter displays Malfunction if the Turbocharger Vane Position Solenoid valve high control circuit is open. |
| Vehicle Speed Output Circuit 2 High Voltage Test Status | — | OK | This parameter displays the state of the Vehicle Speed Output circuit 2 control circuit. The parameter displays Malfunction if the Vehicle Speed Output circuit 2 control circuit is shorted to voltage. |
| Vehicle Speed Output Circuit 2 Low Voltage Test Status | — | OK | This parameter displays the state of the Vehicle Speed Output circuit 2 control circuit. The parameter displays Malfunction if the Vehicle Speed Output Circuit 2 control circuit is shorted to ground. |
| Vehicle Speed Output Circuit 2 Open Test Status | — | OK | This parameter displays the state of the Vehicle Speed Output circuit 2 control circuit. The parameter displays Malfunction if the Vehicle Speed Output circuit 2 control circuit is open. |
| Vehicle Speed Sensor | — | km/h/MPH | This parameter indicates the vehicle speed as calculated by the control module based on a signal from the vehicle speed sensor (VSS). The scan tool will display a higher value at higher vehicle speeds, and a lower value at lower vehicle speeds. |
| Vehicle Speed When Engine Overspeed Detected | Engine Idling | Km/h<br>mph | This parameter displays the Vehicle Speed When Engine Overspeed Detected. |
| Wait to Start Indicator Command | — | On / Off | This parameter displays On when a glow plug indication request is active, and the wait-to-start lamp is commanded on. The wait to start indicator will not illuminate during post-start glow plug operation. |
| Wait to Start Indicator Control Circuit High Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the wait to start indicator control circuit. The parameter displays Malfunction if the wait to start indicator control circuit is shorted to voltage. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Wait to Start Indicator Control Circuit Low Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the wait to start indicator control circuit. The parameter displays Malfunction if the wait to start indicator control circuit is shorted to ground. |
| Wait to Start Indicator Control Circuit Open Test Status | — | Okay, Malfunction, Not Run | This parameter displays the state of the wait to start indicator control circuit. The parameter displays Malfunction if the wait to start indicator control circuit is open. |
| Warm-ups Since DTC Cleared | — | Counts | This parameter indicates the number of warm up cycles that have occurred Since DTCs were cleared. The scan tool will display a higher counts as more warm up cycles have occurred since the DTCs were cleared. |
| Warm-ups without Emission Malfunctions | — | Counts | This parameter indicates the number of warm up cycles that have occurred without an emission fault present. The scan tool will display a 0 if a malfunction has occurred. The scan tool will display a higher count if a number of warm up cycles have occurred without an emission malfunction. |
| Warm-ups without Non-emission Malfunctions | — | Counts | This parameter indicates the number of warm up cycles that have occurred without a non-emission fault present. The scan tool will display a 0 if a malfunction has occurred. The scan tool will display a higher count if a number of warm up cycles have occurred without a non-emission malfunction. |
| Water in Fuel | — | No | This parameter indicates if there is water in the fuel. |
| Water in Fuel Indicator Command | — | Off | This parameter indicates if water in the fuel indicator is On or Off. |
| Water in Fuel Sensor | — | Volts | This parameter displays the water in fuel sensor voltage input. |

## Output Control

| Parameter | Description |
|---|---|
| This is a comprehensive list. Not all output controls listed are available for all applications. | |
| A/C Compressor Clutch Relay | This device control is used to override the state of the air conditioning compressor output. |
| Ambient Air Temperature Calculation Reset | This device control is used to reset the estimated ambient air temperature value to the current sensor value following a service repair. |
| BARO Sensor Reset | This device control is used to reset learned barometric pressure values in case of either an ECU or barometric pressure sensor replacement. |
| Brake Pedal Position Sensor Learn | This device control is used to reset the initialized values for the brake pedal fully released learned position. |
| Catalyst Reset | This device control is used to reset learned values in case of a diesel oxidation catalyst replacement. The engine must be OFF and Ignition ON. |
| Compression Test Starter Relay | This device control is used to set up the internal combustion engine for a compression test. |
| Coolant Fill | This device control is used to start an automatic coolant fill service routine that will ensure proper fill and de-aeration of the cooling system. |

| Parameter | Description |
|---|---|
| Cooling Fan Motor | This device control is used to override the state of cooling fan duty cycle control output. |
| Crankshaft Position Reluctor Ring Learned Values Reset | This device control is used to reset the crank wheel adaptation values in case of an ECU or crank wheel replacement. |
| Crankshaft Position Variation Learn | This device control is used to activate the crankshaft position variation learn (CASE) algorithm which calculates the reference pulse correction factors for the misfire diagnostic. |
| Cylinder 1–8 Fuel Injector Correction Value Reset | This device control is to be used to reset the NVC and ZFC values to zero if one or more of the fuel injectors have been replaced. |
| Cylinder 1–8 Injector Flow Identifier | This device control contains the data that the Engine Control Module will need in order to do proper Injector Fuel Quantity adjustments. If a new ECM is being installed, this data shall be read from the old ECM and transferred to the new ECM.<br>If an injector is replaced, the injector code must be downloaded to the ECM |
| Cylinder Balance Rate Monitor | This device control is used to enable or disable Cylinder Fuel Balancing. |
| Cylinder Power Balance | This device control disables each fuel injector at any engine or vehicle speed. The device control will not change unless changed or cancelled by the scan tool. |
| DPF Pressure Sensor Reset | This device control is used to reset learned values in case of a diesel particulate filter pressure sensor replacement. |
| DPF Regeneration Enable | This function enables a DPF Regeneration when the vehicle meets the conditions for running. This function will by-pass the normal soot model, so the next time the vehicle is under the conditions for an active regeneration to take place, the ECM will go ahead and initiate the regeneration event.<br>This device control is used to Force the Diesel Particulate Filter to perform regeneration. The Device Control sets an indication in the ECU that the controller shall perform regeneration, the next time the driving condition are met. The Regeneration shall be performed even if the tool is no longer connected to the vehicle. |
| DPF Regeneration Inhibit | This device control is used to inhibit the Diesel Particulate Filter to perform regeneration, even if the driving conditions are met. The inhibit function shall only work when the tool is connected to the vehicle. |
| DPF Reset | This device control is used to reset learned values in case of a diesel particulate filter replacement. |
| DPF Service Regeneration | This device control enables a DPF Regeneration. The engine coolant must be greater than 70–115°C (158–239°F). Vehicle must be in Park. Ambient temperature must be greater than −30°C (−22°F). Brake pedal and accelerator must be in the released position. The scan tool will display all inhibit reasons. The scan tool must remain connected until test is complete. This function takes approximately 35 minutes to complete. During this procedure the RPM will slowly increase to 2,500 RPM and remain there for approximately 25 minutes. |
| EGR | This device control is used to verify functionality of the Exhaust Gas Recirculation Valve by allowing the Exhaust Gas Recirculation Valve output to be commanded to a specific duty cycle. |
| EGR Cooler Bypass Motor | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) Cooler Bypass Valve system by allowing the EGR Cooler Bypass Valve output to be commanded to a specific position. |
| EGR Cooler Bypass Valve | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) Cooler Bypass Valve system by allowing the EGR Cooler Bypass Valve output to be commanded to a specific position |
| EGR Valve | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) system by allowing the Exhaust Gas Recirculation output to be commanded to a specific lift. |
| Engine Compression Quick Test | This device control is used to initiate the semi-automatic compression test on Diesel engines. |
| Engine Controls Ignition Relay | This device control is used to override the state of the Powertrain Relay. |
| Engine Oil Life Reset | This device control contains the engine oil remaining life determined from a calibration based upon the effective engine revolutions and the distance driven since the last oil change. This device control may be used to reset the engine oil remaining life to 100% after an oil change or to any other value when replacing an engine control module. |
| Engine Oil Pressure Control Solenoid Valve | This device control is used to override the state of the variable displacement oil pump. When the variable displacement oil pump is turned ON, the oil pump will be commanded to a low pressure state. |
| Engine Speed | This device control is used to override the idle engine speed. |

| Parameter | Description |
|---|---|
| Exhaust Aftertreatment Data Reset | This device control is used to reset the exhaust aftertreatment fuel injector OEM data in case of a replacement. |
| Exhaust Aftertreatment Fuel Injector | This device control is used to verify functionality of the Exhaust Aftertreatment Fuel Injector by allowing Exhaust Aftertreatment Fuel Injector output to be commanded to a specific duty cycle. |
| Exhaust Aftertreatment Fuel Injector Cleaning Procedure | This device control is used to trigger the Exhaust Aftertreatment Fuel Injector tip cleaning procedure. |
| Exhaust Aftertreatment Fuel Injector Flow Test | This device control is used to trigger the Exhaust Aftertreatment Fuel Injector to be commanded on for a calibrateable duration and a calibrateable HC injection quantity in order to test the flow of the injector. |
| Exhaust Gas Recirculation | This device control is used to verify functionality of the Exhaust Gas Recirculation (EGR) system by allowing the Exhaust Gas Recirculation output to be commanded to a specific lift. |
| Exhaust Gas Temperature Sensor Reset | This device control is used to reset the SCR (Selective Catalytic Reduction) Temperature Sensor data in case of a replacement. |
| Fuel Filter Life Reset | This device control resets the fuel filter life remaining to 100%. |
| Fuel Injection Small Quantity Data Reset | This device control is used to reset the learned values of the small quantity adjustment (SQA) map in case of a fuel rail pressure sensor replacement. |
| Fuel Injection Small Quantity Learning Odometer Reset | This device control is used to initialize small quantity learn internal odometer to a default value. |
| Fuel Heater Relay | This device control is used to override the state of the Fuel Filter Heater output. |
| Fuel Injector Balance | This feature will allow the technician to inspect the fuel system for leaks after servicing the fuel system or after any other service procedure that required disconnection or removal of fuel system components. |
| Fuel Injector Correction Value Preset | This device control resets all injector NVC and ZFC values to the default value. This device control is to be used if the old ECM values cannot be transferred to the new ECM after replacement. |
| Fuel Pressure Regulator 1 | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to activate the fuel pressure regulator 1 at ignition ON, engine OFF. Both the low side and high side of the regulator are controlled together. Commanding the regulator to ON will modulate the high side driver to a calibratible “maximum” duty cycle. (Note: As this is an electrical circuit test, a regulator solenoid commanded to ON does not necessarily equate to the regulator state at maximum fuel pressure.) |
| Fuel Pressure Regulator 2 | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to activate the fuel pressure regulator 2 at ignition ON, engine OFF. Both the low side and high side of the regulator are controlled together. Commanding the regulator to ON will modulate the high side driver to a calibratible “maximum” duty cycle. (Note: As this is an electrical circuit test, a regulator solenoid commanded to ON does not necessarily equate to the regulator state at maximum fuel pressure.) |
| Fuel Pump Relay | This device control is used to override the state of the fuel pump output. |
| Fuel Pump 2 Relay | This device control is used to override the state of the electric secondary transfer pump output. |
| Fuel Rail Pressure | This device control is intended for use on a Direct Injection (DI) high pressure fuel supply system to override the commanded fuel high pressure output from the powertrain controller. |
| Fuel Trim Enable | This device control is used to deactivate the Fuel Mass Observer (FMO). |
| Fuel Trim Reset | This device control is used to reset the Fuel Mass Observer data in case of a replacement. |
| Generator L-Terminal | The commanded states are ON and OFF. Selecting OFF commands the ECM to turn OFF the generator and stop generating an output voltage. |
| High Side Driver 1 | This device control is used to override the state of the Shared High Side Driver 1 output. |
| High Side Driver 2 | This device control is used to override the state of the Shared High Side Driver 2 output. |
| HO2S Heater Sensor 1 | This device control is used to override the duty cycle of the oxygen sensor heaters. |
| Intake Air Flow Valve Motor | This function increases or decreases the position of the IAF valve. |
| Intake Air Flow Valve Position | This parameter displays the actual position of the intake air flow valve. |
| Intake Manifold Runner Control Valve | This device control is used to override the state of the intake manifold runner control output. |

| Parameter | Description |
|---|---|
| Malfunction Indicator Lamp (MIL) | This device control is used to either turn the Malfunction Indicator Lamp (MIL) on or off. |
| Misfire Graphic | This device control produces a misfire graphic while the engine is running. |
| NOx Catalyst Reductant Loading Reset | This device control is used to reset the adaptive values for the SCR (Selective Catalytic Reduction) data. |
| NOx Catalyst Reset | This device control is used to reset the Selective Catalytic Reduction (SCR) data in case of a replacement. |
| NOx Sensor 1 Heater- Engine Running | This device control is used to control the duty cycle of the NOx Sensor 1 Heater with the engine running. The Duty Cycle is fixed at a predetermined value and is controlled for a predetermined amount of time. |
| NOx Sensor 1 Reset | This device control is used to reset the NOx Sensor 1 data in case of a replacement. The engine must be Off and the Ignition On. |
| NOx Sensor 2 Heater- Engine Running | This device control is used to control the duty cycle of the NOx Sensor 2 Heater with the engine running. The Duty Cycle is fixed at a predetermined value and is controlled for a predetermined amount of time. |
| NOx Sensor 2 Reset | This device control is used to reset the NOx Sensor 2 data in case of a replacement. The engine must be OFF and the Ignition ON. |
| Particulate Matter Sensor Service Regeneration | This device control is used to force a particulate matter sensor measurement cycle, consisting of a particulate sensor probe regeneration and subsequent soot accumulation measurement. The system will return to normal control after one measurement cycle is successfully completed. One full measurement cycle can take 15 minutes or more to complete depending up the particulate filter state of health. |
| Pilot Injection Balance Procedure | This device control disables each fuel injector pilot injection. Device Control can be changed at any engine or vehicle speed. The device control will not change unless changed or cancelled by the scan tool. |
| Positive Crankcase Ventilation Heater | This device control is used to turn the crankcase ventilation heater output ON or OFF. |
| Prime Fuel Pump | This device control is used to override the state of the fuel pump output. |
| Programming History | This device control is used to view the history buffer entries for the primary calibration part in the controller. |
| Reductant Fluid Quality Test | This device control is used to force a Selective Catalyst Reduction (SCR) Service Quality Check. |
| Reductant Fluid Tank Level Reset | This device control is used to Reset the Reductant Fluid Tank Level. |
| Reductant Heater 1 | This device control is used to override the state of the Reductant Heater 1. The scan tool disables the test when the following control limits are exceeded.<br>• Reductant System DTC is set.<br>• The exhaust temperature is too low.<br>• Ignition voltage is too low.<br>• Ignition voltage is too high. |
| Reductant Heater 2 | This device control is used to override the state of the Reductant Heater 2. |
| Reductant Heater 3 | This device control is used to override the state of the Reductant Heater 3. |
| Reductant Injection Quantity Test | This device control is used to inject a specific amount of reductant from the reductant injector. A system purge will be required once the test is complete. |
| Reductant Injector | This device control is used to verify functionality of the NOx Reductant Injector by allowing NOx Reductant Injector output to be commanded to a specific duty cycle. |
| Reductant Injector Reset | This device control is used to reset the Reductant Injector variables after the Injector is replaced. |
| Reductant Pump | This device control is used to verify functionality of the NOx Reductant Pump by allowing NOx Reductant Pump output to be commanded to a specific duty cycle. |
| Reductant Purge | This device control is used to purge the reductant lines of fluid. |
| Reductant Purge Valve | This device control is used to command the state of the NOx Reductant Line Purge valve. |
| Reductant System Tamper Warning Service Bay Test | This device control is used to force a SCR (Selective Catalyst Reduction) service bay test. |

| Parameter | Description |
|---|---|
| Reductant System Data Reset | This device control is used to reset the ECM data in case of a replacement. |
| Reductant System Leak Test | This device control is used to pressurize the reductant system in order to perform a visual inspection for leaks. A system purge will be required once the test is complete. |
| Reductant System Malfunction Warning Service Bay Test | This device control triggers the Selective Catalytic Reduction (SCR) Tamper Service Bay Test. |
| Reductant System Reset | This device control is used to reset the Reductant Module data in case of a replacement. |
| Remote Vehicle Start Disable History Reset | This device control is used to trigger the reset of the last eight reasons that powertrain has disabled remote vehicle start (RVS). |
| Sensor Supply Voltage Relay | This device control is used to control the sensor bus supply relay. |
| Starter Relay | This device control is used to override the state of the Starter Relay output. Fuel is disabled to prevent the engine from starting if the starter relay output is commanded On. |
| Total Fuel Consumed Reset | This device control contains the after treatment related data parameter that needs to be transferred in case of an ECM replacement. |
| Turbocharger Learn | This device control is used when the Turbocharger assembly, Vane position control solenoid valve, Vane position sensor is replaced, or repairs that disturb turbocharger components. |
| Turbocharger Vane Position | This device control adjusts the turbocharger vane position in 5 percent increments from 0–100 percent. The device control will be aborted if engine speed is above idle or if the coolant temperature is too cold. |
| Turbocharger Vane Position Actuator | This device control is used to control the duty cycle for a variable geometry turbocharger . |
| Turbocharger Vane Position Learn | This device control triggers the Variable Geometry Turbo (VGT) Actuator Learn in the event of a turbocharger or actuator replacement. |
| Turbocharger Vane Position Solenoid Valve | This device control cycles the turbocharger vane position solenoid to 100 percent boost and back to 0 percent boost. The device control is limited to engine speeds less than 1,500 RPM and will be disabled if DTC P0047 or P0048 are set. |
| Wait to Start Indicator | This device control is used to turn the Glow Plug (Wait to start) Lamp ON/OFF. |

## K219 Lighting Control Module: Scan Tool Information

### Lighting Control Module — Data Display — Front Exterior Lighting Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Right Daytime Running Lamps | — | Off | The scan tool displays On or Off. |
| Left Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Right Low Beam Command | — | Inactive | The scan tool displays Active or Inactive. |
| Left Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Front Turn Signal Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Park Lamps Command | — | Off | The scan tool displays On or Off. |
| Right Park Lamps Command | — | Off | The scan tool displays On or Off. |

### Lighting Control Module — Data Display — Rear Exterior Lighting Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Turn Signal Lamps | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Lamps | — | Off | The scan tool displays On or Off. |
| Left Tail Lamp Driver | — | Off | The scan tool displays On or Off. |
| Right Tail Lamp Driver | — | Off | The scan tool displays On or Off. |
| Center High Mounted Stop Lamp Driver | — | Off | The scan tool displays On or Off. |
| License Plate Lamp Circuit Driver | — | Off | The scan tool displays On or Off. |

### Lighting Control Module — Data Display — Side Exterior Lighting Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Left Side Marker Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Side Marker Lamp Command | — | Off | The scan tool displays On or Off. |
| Left Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Repeater Lamp Command | — | Off | The scan tool displays On or Off. |

### Lighting Control Module — Data Display — Indicator Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in Service Mode, Vehicle in Park, All Doors Closed | | | |
| Daytime Running Lamps Indicator | — | Off | The scan tool displays On or Off. |
| Front Park Lamps Indicator | — | Off | The scan tool displays On or Off. |
| Headlamp High Beam Indicator | — | Inactive | The scan tool displays Active or Inactive. |
| Left Turn Signal Indicator | — | Off | The scan tool displays On or Off. |
| Right Turn Signal Indicator | — | Off | The scan tool displays On or Off. |
| Left Front Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |
| Left Rear Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |
| Right Front Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |
| Right Rear Turn Signal Lamp Malfunction Indicator | — | Off | The scan tool displays On or Off. |

### Lighting Control Module — Exterior Lighting — Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Center High Mounted Stop Lamp | This output control is used to activate the center high mounted stop lamp when selecting On. The center high mounted stop lamp should illuminate until commanded Off. |
| Left Stop Lamp | This output control is used to activate the left stop lamp when selecting On. The left stop lamp should illuminate until commanded Off. |
| Right Stop Lamp | This output control is used to activate the right stop lamp when selecting On. The right stop lamp should illuminate until commanded Off. |
| License Plate Lamps | This output control is used to activate the license plate lamps when selecting On. The license plate lamps should illuminate until commanded Off. |
| Backup Lamps | This output control is used to activate the backup lamps when selecting On. The backup lamps should illuminate until commanded Off. |
| Left Front Park Lamp Status | This output control is used to activate the left park lamps when selecting On. The left park lamps should illuminate until commanded Off. |
| Right Front Park Lamp Status | This output control is used to activate the right park lamps when selecting On. The right park lamps should illuminate until commanded Off. |
| Left Daytime Running Lamps | This output control is used to activate the left daytime running lamps when selecting On. The left daytime running lamps should illuminate until commanded Off. |
| Right Daytime Running Lamps | This output control is used to activate the right daytime running lamps when selecting On. The right daytime running lamps should illuminate until commanded Off. |
| Left Auxiliary Daytime Running Lamps | This output control is used to activate the left auxiliary daytime running lamps when selecting On. The left auxiliary daytime running lamps should illuminate until commanded Off. |
| Right Auxiliary Daytime Running Lamps | This output control is used to activate the right auxiliary daytime running lamps when selecting On. The right auxiliary daytime running lamps should illuminate until commanded Off. |
| Left Front Auxiliary Park Lamp Command | This output control is used to activate the left front auxiliary park lamp when selecting On. The left front auxiliary park lamp should illuminate until commanded Off. |
| Right Front Auxiliary Park Lamp Command | This output control is used to activate the right front auxiliary park lamp when selecting On. The right front auxiliary park lamp should illuminate until commanded Off. |
| Left Front Turn Signal Lamp Command | This output control is used to activate the left front turn signal lamp when selecting On. The left front turn signal lamp should illuminate until commanded Off. |
| Right Front Turn Signal Lamp Command | This output control is used to activate the right front turn signal lamp when selecting On. The right front turn signal lamp should illuminate until commanded Off. |
| Left Turn Signal Repeater Lamp Command | This output control is used to activate the left turn signal repeater lamp when selecting On. The left turn signal repeater lamp should illuminate until commanded Off. |
| Right Turn Signal Repeater Lamp Command | This output control is used to activate the right turn signal repeater lamp when selecting On. The right turn signal repeater lamp should illuminate until commanded Off. |
| Left Rear Turn Signal Lamp | This output control is used to activate the left rear turn signal lamp when selecting On. The left rear turn signal lamp should illuminate until commanded Off. |
| Right Rear Turn Signal Lamp | This output control is used to activate the right rear turn signal lamp when selecting On. The right rear turn signal lamp should illuminate until commanded Off. |

## K29FV Front Seat Heater Vent Control Module: Scan Tool Information

### Front Seat Heating Control Module Scan Tool Data Parameters

| Parameter | Expected Values | Description |
|---|---|---|
| **Operating Conditions:** Engine Running | | |
| Seat Heating/Venting/Cooling Load Shed | Inactive / Active | When this parameter is active it indicates the Heating/Venting/ System is shutdown to reduce strain on the vehicle electrical system which is experiencing too high of a current draw |
| Left Front Seat Heating/Venting/ Cooling Operating Conditions | Remote Vehicle Start / Automatic / Manual / Autostop Request | The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |

| Parameter | Expected Values | Description |
|---|---|---|
| Left Front Seat Heating/Venting/ Cooling Switch | Inactive / Active | The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed. |
| Left Front Seat Heating/Venting/ Cooling Requested Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being requested , as determined by the BCM tracking various inputs |
| Left Front Seat Heating/Venting/ Cooling Requested Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being requested  as determined by the BCM tracking various inputs |
| Left Front Seat Heating/Venting/ Cooling Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors |
| Left Front Seat Heating/Venting/ Cooling Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors. |
| Right Front Seat Heating/Venting/ Cooling Operating Conditions | Remote Vehicle Start / Automatic / Manual / Autostop Request | The functional behavior of heated seats is dependent on its determined operational state.  This parameter indicates the defined state which it is operating in. |
| Right Front Seat Heating/Venting/ Cooling Switch | Inactive / Active | The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed. |
| Right Front Seat Heating/Venting/ Cooling Requested Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the BCM tracking various inputs |
| Right Front Seat Heating/Venting/ Cooling Requested Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being requested  as determined by the BCM tracking various inputs |
| Right Front Seat Heating/Venting/ Cooling Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors |
| Right Front Seat Heating/Venting/ Cooling Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors. |

## Front Seat Heating Control Module Scan Tool Output Controls

| Control Functions | Description |
|---|---|
| **Operating Conditions:** Engine Running | |
| Left Front Seat Heating | This output control is used to command the left front seat heater elements On. |
| Right Front Seat Heating | This output control is used to command the right front seat heater elements On. |
| Left Front Seat Blower Command | This output control is used to command the left front seat blower On. |
| Right Front Seat Blower Command | This output control is used to command the right front seat blower On. |

## K29RV Rear Seat Heater Vent Control Module: Scan Tool Information

### Rear Seat Heating Control Module Scan Tool Data Parameters

| Parameter | Expected Values | Description |
|---|---|---|
| **Operating Conditions:** Engine Running | | |
| Seat Heating/Venting/Cooling Load Shed | Inactive / Active | When this parameter is active it indicates the Heating/Venting/ System is shutdown to reduce strain on the vehicle electrical system which is experiencing too high of a current draw |
| Left Rear Seat Heating/Venting/ Cooling Operating Conditions | Remote Vehicle Start / Automatic / Manual / Autostop Request | The functional behavior of heated seats is dependent on its determined operational state. This parameter indicates the defined state which it is operating in. |
| Left Rear Seat Heating/Venting/ Cooling Switch | Inactive / Active | The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed. |
| Left Rear Seat Heating/Venting/ Cooling Requested Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being requested , as determined by the BCM tracking various inputs |
| Left Rear Seat Heating/Venting/ Cooling Requested Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being requested  as determined by the BCM tracking various inputs |
| Left Rear Seat Heating/Venting/ Cooling Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors |
| Left Rear Seat Heating/Venting/ Cooling Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors. |
| Right Rear Seat Heating/Venting/ Cooling Operating Conditions | Remote Vehicle Start / Automatic / Manual / Autostop Request | The functional behavior of heated seats is dependent on its determined operational state.  This parameter indicates the defined state which it is operating in. |
| Right Rear Seat Heating/Venting/ Cooling Switch | Inactive / Active | The Heated/Vented switch assembly contains a number of switches affecting the operation of the Heated Vented Seats. This parameter indicates when any one of the switches is active and is persistent as long as the switch is pressed. |
| Right Rear Seat Heating/Venting/ Cooling Requested Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being requested, as determined by the BCM tracking various inputs |
| Right Rear Seat Heating/Venting/ Cooling Requested Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being requested  as determined by the BCM tracking various inputs |
| Right Rear Seat Heating/Venting/ Cooling Mode | Off / Seat Back Heating / Seat Back and Cushion Heating / Seat Venting/ Cooling | This parameter indicates the type of Heated/Vented Seat function being applied as commanded by the BCM software based on a number of factors |
| Right Rear Seat Heating/Venting/ Cooling Level | Off / High / Medium / Low | This parameter indicates the type of Heated/Vented Seat level of intensity being applied as commanded by the BCM software based on a number of factors. |

### Rear Seat Heating Control Module Scan Tool Output Controls

| Control Functions | Description |
|---|---|
| **Operating Conditions:** Engine Running | |
| Left Rear Seat Heating | This output control is used to command the left rear seat heater elements On. |
| Right Rear Seat Heating | This output control is used to command the right rear seat heater elements On. |
| Left Rear Seat Blower Command | This output control is used to command the left rear seat blower On. |
| Right Rear Seat Blower Command | This output control is used to command the right rear seat blower On. |

## K36 Restraints Control Module: Scan Tool Information

**Note:** Some parameters and values in the table below may not apply to every vehicle.

### Restraints Control Module Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| 2nd Row Left Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the left rear seat belt reminder sensor pad is enabled to the RCM. |
| 2nd Row Left Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the left rear seat belt reminder sensor pad has been learned by the RCM. |
| 2nd Row Left Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the left rear seat belt switch when the seat belt is buckled or unbuckled. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the rear middle seat belt reminder sensor pad is enabled to the RCM. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the rear middle seat belt reminder sensor pad has been learned by the RCM. |
| 2nd Row Middle Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the middle rear seat belt switch when the seat belt is buckled or unbuckled. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the rear right seat belt reminder sensor pad is enabled to the RCM. |
| 2nd Row Middle Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the rear right seat belt reminder sensor pad has been learned by the RCM. |
| 2nd Row Right Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the right rear seat belt switch when the seat belt is buckled or unbuckled. |
| Air Bag Malfunction Indicator | On/Off/Flashes | The scan tool will display On or Flashes if there is a problem with the SIR system. Any problems within the SIR system will illuminate the air bag indicator. The indicator will either flash or stay on. |
| Base Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the RCM which is stored in non volatile memory. |
| Calibration Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the calibration file in the RCM. |
| Deployment Loop 1-18 Enable Status | Enabled/Disabled | The scan tool displays Enabled or Disabled. This is the status of the air bag or pretensioner. |
| Deployment Loop 1-18 Learn Status | Learned/Not Learned | The scan tool displays Learned or Not learned. Learned is displayed if the RCM has defined the number loop programmed from an air bag or pretensioner. |
| Deployment Loop 1-18 Resistance | 1.44–4.25 Ohms | The scan tool displays the resistance of the learned loop of the air bag or pretensioner when connected to the RCM. |
| Deployment Loop 1-18 Type | Varies | The scan tool displays the name of the air bag or pretensioner associated with the loop type 1–18. |
| Driver Seat Belt Reminder Indicator | On/Off | The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled. |
| Driver Seat Belt Sensor Enable Status | Enabled/Disabled | The scan tool displays if the seat belt sensor in the seat belt buckle is enabled to the RCM. |
| Driver Seat Belt Sensor Learn Status | Learned/Not learned | The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat belt sensor has been learned by the RCM. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Driver Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the driver seat belt switch when the seat belt is buckled or unbuckled. |
| Driver Seat Position Sensor | Rearward/Forward | The scan tool will display if the driver seat is forward or rearward of the sensor set position. |
| Driver Seat Position Sensor Enable Status | Enabled/Disabled | The scan tool displays if the seat position sensor is enabled to the RCM. |
| Driver Seat Position Sensor Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the driver seat position sensor has been learned by the RCM. |
| End Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the RCM in production. |
| Impact Sensor 1-8 Enable Status | Enabled/Disabled | The scan tool displays Enabled or Disabled This is the status of the impact sensor. |
| Impact Sensor 1-8 Learn Status | Learned/Not Learned | The scan tool displays Learned or Not learned. Learned is displayed if the RCM has learned and has assigned a number to that impact sensor. |
| Impact Sensor 1-8 Type | Equipped/Not Equipped | The scan tool displays the name of the impact sensor associated with the type 1–8. |
| Restraint Control Module Module Primary Key | Hex Value | The scan tool indicates the primary key Hex value. |
| Manufacturer's Traceability Number | Varies, 16 Digit Number | The scan tool displays the 16 digit traceability number in the RCM. |
| Module Setup | Incomplete/Complete | The scan tool indicates if the RCM is set up. |
| Passenger Air Bag Disabled Switch | On/Off | The scan tool displays Off when the customer manually turns the passenger airbag off with this switch. |
| Passenger Air Bag Off Indicator | On/Off | The scan tool displays Off when the passenger indicator is not illuminated. This indicator is off when the disable switch is in the off position or no one is sitting in the passenger seat. |
| Passenger Air Bag On Indicator | On/Off | The scan tool displays On when the passenger indicator is illuminated. This indicator is on when the disable switch is in the on position and someone is sitting in the passenger seat. |
| Passenger Air Bag Status | Enabled/Disabled | The scan tool displays if the passenger air bag is enabled to the RCM. |
| Passenger Air Bag Disable Indicator Enable Status | Enabled/Disabled | The scan tool displays if the passenger air bag disable indicator is enabled to the RCM. |
| Passenger Air Bag Disable Indicator Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag disable indicator. |
| Passenger Air Bag Disable Switch Enable Status | Enabled/Disabled | The scan tool displays if the passenger air bag disable switch is enabled to the RCM. |
| Passenger Air Bag Disable Switch Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag disable switch. |
| Passenger Air Bag Enable Indicator Enable Status | Enabled/Disabled | The scan tool displays if the passenger air bag enable indicator is enabled to the RCM. |
| Passenger Air Bag Enable Indicator Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the status of the passenger air bag enable indicator. |
| Passenger Classification | 00–07 | The scan tool will display what type of individual is sitting in the passenger seat. |
| Passenger Presence Detection System Enable Status | Enabled/Disabled | The scan tool displays if the restraint occupation classification system is enabled to the RCM. |
| Passenger Presence Detection System Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the RCM has learned the passenger presence system. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Presence Detection System Reporting DTC(s) | Yes/No | The RCM will report if there are DTCs set in the passenger presence module. |
| Passenger Seat Belt Reminder Indicator | On/Off | The scan tool displays On if this indicator is on. If the indicator is on it means the seat belt has not been buckled. |
| Passenger Seat Belt Reminder Indicator Enable Status | Disabled/Enabled | The scan tool displays if the passenger seat belt reminder indicator is enabled to the RCM. |
| Passenger Seat Belt Reminder Indicator Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder indicator has been learned by the RCM. |
| Passenger Seat Belt Reminder Sensor Pad Enable Status | Disabled/Enabled | The scan tool displays if the passenger seat belt reminder sensor pad is enabled to the RCM. |
| Passenger Seat Belt Reminder Sensor Pad Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt reminder sensor pad has been learned by the RCM. |
| Passenger Seat Belt Sensor Enable Status | Enabled/Disabled | The scan tool displays if the seat position sensor is enabled to the RCM. |
| Passenger Seat Belt Sensor Learn Status | Learned/Not learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat belt sensor has been learned by the RCM. |
| Passenger Seat Belt Status | Buckled/Unbuckled | The scan tool displays Buckled or Unbuckled. This is the state of the passenger seat belt switch when the seat belt is buckled or unbuckled. |
| Passenger Seat Occupancy Status | Empty Seat/Occupied | The scan tool displays Occupied if someone is sitting in the passenger seat. |
| Passenger Seat Position Sensor | Rearward/Forward | The scan tool will display if the passenger seat is forward or rearward of the sensor set position. |
| Passenger Seat Position Sensor Enable Status | Disabled/Enabled | The scan tool displays if the passenger seat position sensor pad is enabled to the RCM. |
| Passenger Seat Position Sensor Learn Status | Learned/Not Learned | The scan tool displays Learned or Not Learned. Learned is displayed if the passenger seat position sensor has been learned by the RCM. |
| Power Mode | Off/Accessory/Run/Crank Request | The scan tool will display the power mode of the vehicle. |
| Primary Key Status | Valid/Invalid | The scan tool displays Valid if the primary key matches what is stored to memory in the RCM. |
| Primary Key Status Last Ignition Cycle | Invalid/Valid | The RCM checks to see if the primary key data received is valid. |
| Received Primary Key | Hex Value | The scan tool displays a Hex value indicating the RCM received primary key data. |
| Rollover Sensor Enable Status | Disabled/Enabled | The scan tool displays if the rollover sensor is enabled to the RCM. |
| Rollover Sensor Learn Status | Learn/Unlearn | The scan tool displays Learned or Not Learned. Learned is displayed if the rollover sensor has been learned by the RCM. |
| Security Code Accepted | Yes/No | The RCM either accepts the security code or it does not. The scan tool displays Yes if the security code has been accepted by the RCM. |
| Security Code Lockout | Yes/No | The scan tool displays Yes if the RCM has been locked out because of the security code not being accepted. |
| Security Code Lockout Active Timer | Random Value | The RCM uses a timer before the security code is locked in the RCM. |
| Security Code Programmed | Yes/No | The scan tool displays Yes if the RCM has been programmed with the security code. |
| Security Code Programming Counter | Random Value | The RCM uses a counter for the value of the security code programming. |
| Security Code Reset Counter | Random Value | The RCM uses a counter to reset the value of the security code. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Software Part Number | Varies, 8 Digit Number | The scan tool displays the software part number in the RCM. |
| Vehicle Identification Number | Varies, 17 Digit Number | The VIN number of the vehicle programmed into the RCM. |
| VIN Programmed | Yes/No | The scan tool displays Yes if the VIN has been programmed into the RCM. |
| VIN Programming Counter | Random Value | The RCM uses this counter while programming the VIN. |

## K40D Driver Seat Adjuster Memory Module: Scan Tool Information

### Seat Position Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Driver Seat Back Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed. |
| Driver Seat Back Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor. |
| Driver Seat Back Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position. |
| Driver Seat Cushion Front Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor. |
| Driver Seat Cushion Front Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position. |
| Driver Seat Cushion Front Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Cushion Rear Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor. |
| Driver Seat Cushion Rear Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position. |
| Driver Seat Cushion Rear Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor. |
| Driver Seat Horizontal Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Driver Seat Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Lumbar Support Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Lumbar Support Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor. |
| Lumbar Support Horizontal Position | Varies | The module stores the pressure information for lumbar position. |
| Driver Seat Lumbar Support Vertical Switch | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Driver Seat Lumbar Support Vertical Direction Command | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor. |
| Driver Seat Memory Recall Switches | Inactive | The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected. |
| Driver Seat Memory Set Switch | Inactive | The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active. |
| Driver Seat Back Side Bolster Direction Command | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump. |
| Driver Seat Back Side Bolster Switch | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed. |
| Driver Seat Cushion Side Bolster Direction Command | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/bolster pump. |
| Driver Seat Cushion Side Bolster Switch | Inactive | The scan tool displays Inactive, Inflate, or Deflate. When the seat back side bolster switch is pressed, the scan tool should display the function for which the switch is pressed. |
| Seat Massage Switch | Inactive | The scan tool displays Inactive/Active. When the seat massage switch s pressed, the scan tool should display Active. |

### Mirror Memory Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Mirror Select Switch | None | The scan tool displays None, Driver Door, or Passenger Door. The scan tool displays the current state of the mirror select switch. |
| Mirror Direction Switch | Inactive | The scan tool displays Inactive/Up/Down/Left/Right/Folding/Extending. The scan tool displays the current state of the power mirror switch as pressed. |
| Driver Mirror Direction Command | Inactive | The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the driver mirror motors. |
| Driver Mirror Vertical Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the driver vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Driver Mirror Horizontal Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the driver horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out. |
| Passenger Mirror Direction Command | Inactive | The scan tool displays Inactive/Up/Down/Left/Right. When the power mirror switch is being used or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the passenger mirror motors. |
| Passenger Mirror Vertical Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the passenger vertical motor. High voltage values indicate the mirror position is up, while low count values indicate the mirror position is down. |
| Passenger Mirror Horizontal Position | Varies | The scan tool displays 0–5 V. The voltage displayed represents the position of the passenger horizontal motor. High voltage values indicate the mirror position is to the right or in, while low count values indicate the mirror position is to the left or out. |

## Steering Column Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Steering Column Direction Switch | Varies | The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the steering column switch is pressed, the scan tool should display the direction for which the switch is pressed. |
| Steering Column Direction Command | Varies | The scan tool displays Inactive, Forward, Rearward, Up, or Down. When the module is commanding movement of the column, the scan tool should display the direction the module is commanding the column to move in. |
| Steering Column Vertical Position | Varies | The scan tool displays 0–5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is up while lower voltage readings indicate the steering wheel position is down. |
| Steering Column Horizontal Position | Off | The scan tool displays 0–5 V. The voltage displayed is an input to the seat memory control module from the steering column vertical position sensor. Higher voltage readings indicates the steering wheel position is forward toward the front of the vehicle or away from the driver while lower voltage readings indicate the steering wheel position is rearward toward the driver. |

## Seat Memory Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Driver Seat Back Horizontal Movement | This output control is used to command the driver seat back recline position Forward and Rearward. |
| Driver Seat Cushion Front Vertical Movement | This output control is used to command the driver seat cushion front vertical position Up and Down. |
| Driver Seat Cushion Rear Vertical Movement | This output control is used to command the driver seat cushion rear vertical position Up and Down. |
| Driver Seat Horizontal Movement | This output control is used to command the driver seat horizontal position Forward and Rearward. |
| Driver Seat Back Side Bolster Movement | This output control is used to command the driver seat back side bolster support to Inflate or Deflate. |

| Control Functions | Description |
|---|---|
| Driver Seat Lumbar Support Horizontal Movement | This output control is used to command the driver seat lumbar horizontal position Forward and Rearward. |
| Driver Seat Lumbar Support Vertical Movement | This output control is used to command the lumbar vertical position Up and Down. |

### Mirror Memory Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Driver Mirror Fold | This output control is used to command the driver mirror to fold and unfold. |
| Driver Mirror Movement | This output control is used to command the driver mirror up and down or left and right. |
| Passenger Mirror Fold | This output control is used to command the passenger mirror to fold and unfold. |
| Passenger Mirror Movement | This output control is used to command the passenger mirror up and down or left and right. |

### Adjustable Steering Column Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Steering Column Tilt Up Command | This output control is used to command the steering column to the up position. |
| Steering Column Tilt Down Command | This output control is used to command the steering column to the down position. |
| Steering Column Telescope Forward Command | This output control is used to command the steering column to the forward position. |
| Steering Column Telescope Rearward Command | This output control is used to command the steering column to the rearward position. |

### Seat Cushion Haptic Motors Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Driver Seat Cushion Left Rear Haptic Movement | This output control is used to Enable and Disable the driver seat cushion left rear haptic motor function. |
| Driver Seat Cushion Right Rear Haptic Movement | This output control is used to Enable and Disable the driver seat cushion right rear haptic motor function. |

## K40P Passenger Seat Adjuster Memory Module: Scan Tool Information

### Seat Memory Control Module Scan Tool Data Display Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Passenger Seat Back Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed, the scan tool displays the direction for which the switch is pressed. |
| Passenger Seat Back Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat recline switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat recline motor. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Seat Back Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat back is in the forward position, while low count values indicate that the seat back is in the rearward position. |
| Passenger Seat Cushion Front Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat front vertical motor. |
| Passenger Seat Cushion Front Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat front vertical is in the up position, while low count values indicate that the seat front vertical is in the down position. |
| Passenger Seat Cushion Front Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat front vertical switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Cushion Rear Vertical Direction Command | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat rear vertical motor. |
| Passenger Seat Cushion Rear Vertical Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat rear vertical is in the up position, while low count values indicate that the seat rear vertical is in the down position. |
| Passenger Seat Cushion Rear Vertical Switch | Inactive | The scan tool displays Inactive, Up or Down. When the seat rear vertical switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed or when a memory recall occurs, the scan tool displays the direction the memory control module is commanding the seat horizontal motor. |
| Passenger Seat Horizontal Position | Varies | The scan tool displays 0–65,535 counts. The module counts the number of pulse signals with each rotation of the motor that the scan tool displays as counts. High count values indicate that the seat horizontal position is forward, while low count values indicate that the seat horizontal position is rearward. |
| Passenger Seat Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat horizontal switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Lumbar Support Horizontal Switch | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Lumbar Support Horizontal Direction Command | Inactive | The scan tool displays Inactive, Forward, or Rearward. When the seat lumbar horizontal switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar horizontal motor. |
| Passenger Seat Lumbar Support Horizontal Position | Varies | |
| Passenger Seat Lumbar Support Vertical Switch | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool will display the direction for which the switch is pressed. |
| Passenger Seat Lumbar Support Vertical Direction Command | Inactive | The scan tool displays Inactive, Up, or Down. When the seat lumbar vertical switch is pressed, the scan tool displays the direction the memory control module is commanding the seat lumbar vertical motor. |
| Passenger Seat Back Side Bolster Switch | Inactive | The scan tool displays Inactive, In, or Out. When the seat back side bolster switch is pressed, the scan tool will display the function for which the switch is pressed. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Passenger Seat Back Side Bolster Direction | Inactive | The scan tool displays Inactive, In or Out. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/ bolster pump. |
| Seat Cushion Side Bolster Switch | Inactive | The scan tool displays Inactive, In, or Out. When the seat back side bolster switch is pressed, the scan tool will display the function for which the switch is pressed. |
| Seat Cushion Side Bolster Direction Command | Inactive | The scan tool displays Inactive, In or Out. When the seat back side bolster switch is pressed, the scan tool displays the function the memory control module is commanding the seat lumbar/ bolster pump. |
| Passenger Seat Memory Recall Switches | Inactive | The scan tool displays Inactive, Memory 1, Memory 2, or Exit. When a memory function switch is pressed, the scan tool should momentarily display the function selected. |
| Passenger Seat Memory Set Switch | Inactive | The scan tool displays Inactive/Active. When the memory SET switch is pressed, the scan tool should display Active. |
| Seat Massage Switch | Inactive | The scan tool displays Inactive/Active. When the massage switch is pressed, the scan tool should display Active. |

### Seat Memory Control Module Scan Tool Control Functions

| Control Functions | Description |
|---|---|
| Seat Back Direction Command | This output control is used to command the seat back recline position Forward and Rearward. |
| Seat Back Side Bolster Direction Command | This output control is used to command the seat back side bolster position In or Out. |
| Seat Cushion Side Bolster Direction Command | This output control is used to command the seat cushion side bolster position In or Out. |
| Seat Cushion Front Vertical Direction Command | This output control is used to command the seat cushion front vertical position Up and Down. |
| Seat Cushion Rear Vertical Direction Command | This output control is used to command the seat cushion rear vertical position Up and Down. |
| Seat Horizontal Directional Command | This output control is used to command the seat horizontal position Forward and Rearward. |
| Lumbar Support Horizontal Direction Command | This output control is used to command the seat lumbar horizontal position Forward and Rearward. |
| Lumbar Support Vertical Direction Command | This output control is used to command the seat lumbar vertical position Up and Down. |

## K43 Power Steering Control Module: Scan Tool Information

### Power Steering Control Module Scan Tool Data Parameters

| Parameter | Expected Value | Description |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Steering Wheel Input Torque | Varies | This displays the current steering input torque inN•m |
| Power Steering System Status | No Assist<br>No Assist – Auto Stop Active<br>Full Assist<br>Limp Home Mode<br>Limp Aside Mode | This displays the current status of the power steering system. When no faults are present, the status should be Full Assist. |

| Parameter | Expected Value | Description |
|---|---|---|
| Power Steering System Assist Status | Normal<br>Maximum Assist - Level 1<br>Maximum Assist - Level 2<br>Minimum Assist - Level 1<br>Minimum Assist - Level 2 | This displays the current performance mode of the power steering assist. |
| Advanced Parking Assist Status | Temporarily Inhibited<br>Available<br>Active<br>Malfunction | This displays the current status of the advance parking assist system. |
| Power Steering Softstops Learn Status | Not Learned<br>Learned | This displays whether the power steering rack softstops have been learned. |
| Battery Voltage | Varies | This displays Volts. This is the current battery voltage. |
| Ignition On Time | Varies | This displays seconds. This is the amount of time the current ignition cycle has been active. |
| Vehicle Speed | 0 Km/h (0 MPH) | This displays km/h (mph). This is the current vehicle speed. |
| Electric Power Steering Motor Current Commanded | Varies | This displays amps (A). This displays the amount of current requested by the power steering assist motor. |
| Electric Power Steering Motor Current Feedback | Varies | This displays amps (A). This displays the Electric Power Steering Motor Current Feedback. |
| Calculated Steering Gear Rack Travel | Varies | This displays mm. This is the amount of rack travel in either direction from center. |
| Power Steering Output Torque | Varies | This displays N•m . This displays the current value of the Output Torque of the Electric Power Steering. |
| Calculated System Temperature | Varies | This displays ° C. This is the current system temperature. |
| Power Steering Level 1 Malfunction Ignition Cycle Counter | Varies | This displays counts. This is the number of ignition cycles performed while the vehicle is in a state of Power Steering Level 1 Malfunction. |
| Power Steering Motor Overload Protection Counter | Varies | This displays counts. This displays the Electric Power Steering Motor Overload Protection Incidents counter. |
| Ignition Cycle Counter | Varies | This displays counts. This number of ignition cycles performed. |
| Steering Wheel Angle Sensor Calibration Status | Unknown<br>Estimated<br>Calibrated | This displays the current calibration status of the steering wheel angle sensor. |
| Power Steering Assist Request from other Vehicle Device | Unknown<br>Temporarily Inhibited<br>Inactive<br>Active<br>Temporarily Limited<br>Malfunction | Displays the current state of requests to the power steering control module for assist from other vehicle devices. |
| Power Steering Assist Inhibited - Motor Over Temperature | Yes/No | Indicates if the power steering assist motor is experiencing an over temperature condition and is reducing assist. |

| Parameter | Expected Value | Description |
|---|---|---|
| Power Steering Motor Assist Status | Normal<br>Reduced<br>Unavailable | This displays the current status of the power steering assist motor. |
| Power Steering Assist Mode | None<br>Normal<br>Sport Mode<br>Comfort<br>Track Mode<br>Tow/Haul<br>City Mode<br>Performance | This displays the currently selected assist mode. |
| System Power Mode | Off<br>Accessory<br>Run<br>Start<br>Propulsion Active | This displays the current ignition power mode of the vehicle. |
| System Logistic Setting | Off<br>Assembly Plant Mode<br>Transport Mode<br>Storage Mode | This displays the currently selected logistic setting of the vehicle system. |

### Power Steering Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Steering Wheel Angle Sensor Learn | Command to relearn the center position of the power steering system. |
| Power Steering Active Pull/Drift Compensation Learn | Clear active pull compensation learned limits.<br>Command to reset the active pull compensation learned values. |

## K60 Column Lock Module: Scan Tool Information

### Scan Tool Data Parameters

| Parameter | Expected Value | Description |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Column Lock Status | Locked<br>Invalid<br>Unlocked<br>Unknown | The scan tool displays Failed, Unknown, Locked and Unlocked. The scan tool displays the current state of the column lock. |
| Turn Steering Wheel, Start Vehicle Again Display Message | Inactive<br>Active | The scan tool displays Active/Inactive. If the wheels are against a curb, the lock pin may not be able to pull out. A message for the driver that is displayed on the Driver Information Center. The scan tool displays the need to turn the steering wheel, turn off the vehicle and then restart the vehicle. |
| Steering Column Lock Indicator | Inactive<br>Active | The scan tool displays Active/Inactive. The scan tool displays the current state of the column lock. |

## K68 Trailer Lighting Control Module: Scan Tool Information

### Body Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition ON, Vehicle in Park. | | | |
| Battery Voltage | — | Varies | The scan tool displays the current battery voltage. |
| Brake Pedal Switch Status | — | Active/Inactive | The scan tool displays the status of the brake pedal |
| State of Charge | — | Varies | The scan tool displays percentage. This parameter displays state of charge status. |
| System Voltage | — | Varies | The scan tool displays the current system voltage. |
| Trailer Connection Status | — | Connected/Not Connected | The scan tool displays the trailer connected status. |

### Body Control Module Scan Tool Output Controls

| Scan Tool Output Control | Description |
|---|---|
| Left Trailer Turn Signal/ Stop Lamp Command | The Trailer Lighting Control Module activates the left trailer turn signal/stop lamp control circuit when you select Active. B+ should be applied to terminal G at the X88 Trailer Connector. |
| Right Trailer Turn Signal/ Stop Lamp Command | The Trailer Lighting Control Module activates the right trailer turn signal/stop lamp control circuit when you select Active. B+ should be applied to terminal D at the X88 Trailer Connector. |
| Left Trailer Tail Lamp | The Trailer Lighting Control Module activates the trailer park lamp control circuit when you select Active. B+ should be applied to terminal F at the X88 Trailer Connector. |
| Right Trailer Tail Lamp | The Trailer Lighting Control Module activates the trailer park lamp control circuit when you select Active. B+ should be applied to terminal F at the X88 Trailer Connector. |
| Trailer Backup Lamps | The Trailer Lighting Control Module activates the trailer backup lamp control circuit when you select Active. B+ should be applied to terminal A at the X88 Trailer Connector. |

## K71 Transmission Control Module: Scan Tool Information (10L80 (MHS, MQC))

### K71 Transmission Control Module — Scan Tool Parameter

| Parameter | Expected Value | Units |
|---|---|---|
| **Note:** The following scan tool parameter values were taken from a normally operating vehicle. The parameter values on a different vehicle will vary slightly which depends on the following operating conditions:<br>• Altitude<br>• Ambient Air Temperature<br>• Ambient Humidity<br>• Engine Coolant Temperature<br>**Operating Conditions:** Ignition= On— Accessories= Off | | |
| Accelerator Pedal Position | Varies | % |
| Automatic Transmission Auxiliary Fluid Pump Command | On<br>Off | — |
| Automatic Transmission Auxiliary Fluid Pump Control Circuit Low Test Status | Not RunorOkay | — |
| Automatic Transmission Auxiliary Fluid Pump Control Circuit Open Test Status | Not RunorOkay | — |
| Automatic Transmission Auxiliary Fluid Pump Control Circuit High Test Status | Not RunorOkay | — |
| Brake Pedal Position Switch | Brake Pedal Released= Released<br>Brake Pedal Applied= Applied | — |

| Parameter | Expected Value | Units |
|---|---|---|
| Calculated Line Pressure | Ignition On - Engine Off= 550 /80<br>Ignition On - Engine Running= 550 /80<br>48 km/h (30 MPH) = 500 /73<br>80 km/h (50 MPH) = 524 /76 | kPa / PSI |
| Calculated Throttle Position | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 10<br>80 km/h (50 MPH) = 13 | % |
| Control Module Voltage Signal | Ignition On - Engine Off= 12.60<br>Ignition On - Engine Running= 14.40 | V |
| Current Gear | P = Park<br>R = Reverse<br>N = Neutral<br>D = 1–10<br>L = 1–10 | — |
| Distance Since Diagnostic Trouble Code Cleared | Varies | km / mi |
| Driver Requested Axle Torque | Varies | N·m |
| Driver Shift Control Mode | S3 Transmission Shift Lever — P, R, N, D = Inactive<br>S3 Transmission Shift Lever — L, M, S = Active | — |
| Electronic Transmission Range Select Actual Range | Park<br>Neutral Low<br>Neutral High<br>Drive<br>Reverse<br>Neutral Shift | — |
| Engine Coolant Temperature | Ignition On - Engine Off= 41 /105<br>Ignition On - Engine Running= 52 /126<br>48 km/h (30 MPH) = 87 /189<br>80 km/h (50 MPH) = 94 /201 | °C/°F |
| Engine Speed | Ignition On - Engine Off= 0<br>Ignition On - Engine Running= 582<br>48 km/h (30 MPH) = 1173<br>80 km/h (50 MPH) = 1277 | RPM |
| Engine Torque | Ignition On - Engine Off= −41 /−30<br>Ignition On - Engine Running= 15 /11<br>48 km/h (30 MPH) = 58 /43<br>80 km/h (50 MPH) = 136 /100 | N·m/lb ft |
| Gear Command | P = Park<br>R = Reverse<br>N = Neutral<br>D = 1–10<br>L = 1–10 | — |
| Gear Ratio | 1 = 4.70:1<br>2 = 2.99:1<br>3 = 2.15:1<br>4 = 1.77:1<br>5 = 1.52:1<br>6 = 1.28:1<br>7 = 1.00:1<br>8 = 0.85:1 | — |

| Parameter | Expected Value | Units |
|---|---|---|
| | 9 = 0.69:1<br>10 = 0.64:1<br>R = 4.87:1 | |
| High Side Driver Circuit High Test Status | Okay | — |
| High Side Driver Circuit Low Test Status | Okay | — |
| High Side Driver Circuit Open Test Status | Not Run | — |
| High Side Driver Command | Engine ≠Running= Disabled<br>Engine — Running= Enabled | — |
| High Side Driver 2 Circuit High Test Status | Okay | — |
| High Side Driver 2 Circuit Low Test Status | Okay | — |
| High Side Driver 2 Circuit Open Test Status | Not Run | — |
| High Side Driver 2 Command | Engine ≠Running= Off<br>Engine — Running= On | — |
| Ignition and Start Switch Accessory Signal | On | — |
| Ignition and Start Switch Signal | On | — |
| Ignition and Start Signal | Ignition On - Engine Off= 12.6<br>Ignition On - Engine Running= 14.4 | V |
| Input Shaft Speed Sensor | Ignition On - Engine Off= 0<br>Ignition On - Engine Running= 551<br>48 km/h (30 MPH) = 1166<br>80 km/h (50 MPH) = 1184 | RPM |
| Input Speed Sensor Direction | Forward<br>Reverse | — |
| Input Speed Sensor Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Intermediate Speed Sensor | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 1170<br>80 km/h (50 MPH) = 2754 | RPM |
| Intermediate Speed Sensor Direction | Forward<br>Reverse | — |
| Intermediate Speed Sensor Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Intermediate Speed Sensor 2 | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 1166<br>80 km/h (50 MPH) = 2754 | RPM |
| Intermediate Speed Sensor 2 Direction | Forward<br>Reverse | — |
| Intermediate Speed Sensor 2 Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |
| Last Shift Time | 0.12 | [s] |
| Output Shaft Speed Sensor | 0 km/h (0 MPH) = 0<br>48 km/h (30 MPH) = 1159<br>80 km/h (50 MPH) = 1720 | RPM |
| Output Speed Sensor Direction | Forward<br>Reverse | — |
| Output Speed Sensor Direction Signal | Forward= 0.05<br>Reverse= 0.18 | ms |

| Parameter | Expected Value | Units |
|---|---|---|
| Park System Status | P = Park<br>R, N, D, L, S = Out of Park | — |
| Power Mode | Off<br>Accessory<br>Run<br>Crank Request | — |
| Propulsion System Status | Engine Running= Active<br>Engine Off= Inactive | Active |
| Shift Limiting Active Reason | None | — |
| Sensor Supply Circuit Status | Okay | — |
| Sensor Supply 2 Circuit Status | Okay | — |
| Torque Converter Clutch Pressure Command | 0.00 | kPa / PSI |
| Torque Converter Clutch Desired Slip Speed | 0.0 | RPM |
| Torque Converter Clutch Slip Speed | Ignition On - Engine Off= 0<br>Ignition On - Engine Running= 30<br>48 km/h (30 MPH) = 1<br>80 km/h (50 MPH) = 47 | RPM |
| Tow/Haul Mode | Inactive<br>Active | — |
| Transmission Clutch 1-6 Return Spring Learn Status | Inactive<br>Learn Inhibited - Transmission Fluid Temperature Too Low<br>Learn Inhibited - Transmission Fluid Temperature Too High<br>Learn inhibited — malfunction present<br>Learn Inhibited - Throttle Position/Engine Torque Unstable<br>Learn Inhibited - Accelerator Pedal Angle Too Small<br>Learn Inhibited - Accelerator Pedal Angle Too Large<br>Learn Inhibited - Engine Speed Too Low<br>Learn Inhibited - Engine Speed Too High<br>Learn Inhibited - Rough Road<br>Learn in Progress | — |
| Transmission Clutch 1-6 Return Spring Learn Required | Yes<br>No | — |
| Transmission Clutch 1-6 Return Spring Learn Driving Maneuver Required | None<br>1-2 Upshift<br>2-3 Upshift<br>2-4 Upshift<br>3-4 Upshift<br>4-5 Upshift<br>5-6 Upshift<br>6-7 Upshift<br>7-8 Upshift<br>8-9 Upshift<br>9-10 Upshift<br>10-9 Downshift<br>9-8 Downshift<br>8-7 Downshift | |

| Parameter | Expected Value | Units |
|---|---|---|
| | 7-6 Downshift<br>6-5 Downshift<br>5-4 Downshift<br>4-3 Downshift<br>3-2 Downshift<br>3-1 Downshift<br>2-1 Downshift<br>1st Gear<br>2nd Gear<br>3rd Gear<br>4th Gear<br>5th Gear<br>6th Gear<br>7th Gear<br>8th Gear<br>9th Gear<br>10th Gear | |
| Transmission Clutch 1-6 Return Spring Learn Progress Counter | Varies | Counts |
| Transmission Clutch 1-6 Volume Learn Status | Inactive<br>Learn Inhibited - Transmission Fluid Temperature Too Low<br>Learn Inhibited - Transmission Fluid Temperature Too High<br>Learn inhibited — malfunction present<br>Learn Inhibited - Throttle Position/Engine Torque Unstable<br>Learn Inhibited - Accelerator Pedal Angle Too Small<br>Learn Inhibited - Accelerator Pedal Angle Too Large<br>Learn Inhibited - Engine Speed Too Low<br>Learn Inhibited - Engine Speed Too High<br>Learn Inhibited - Rough Road<br>Learn in Progress | — |
| Transmission Clutch 1-6 Volume Learn Required | Yes<br>No | — |
| Transmission Clutch 1-6 Volume Learn Progress Counter | Varies | Counts |
| Transmission Clutch 1-6 Volume Learn Driving Maneuver Required | None<br>1-2 Upshift<br>2-3 Upshift<br>2-4 Upshift<br>3-4 Upshift<br>4-5 Upshift<br>5-6 Upshift<br>6-7 Upshift<br>7-8 Upshift<br>8-9 Upshift<br>9-10 Upshift<br>10-9 Downshift<br>9-8 Downshift<br>8-7 Downshift<br>7-6 Downshift | — |

| Parameter | Expected Value | Units |
|---|---|---|
|  | 6-5 Downshift<br>5-4 Downshift<br>4-3 Downshift<br>3-2 Downshift<br>3-1 Downshift<br>2-1 Downshift<br>1st Gear<br>2nd Gear<br>3rd Gear<br>4th Gear<br>5th Gear<br>6th Gear<br>7th Gear<br>8th Gear<br>9th Gear<br>10th Gear |  |
| Transmission Control Solenoid Valve 1–9 Calibration Data | Valid | — |
| Transmission Control Solenoid Valve 1-9 Control Circuit High Test Status | Not RunorOkay | — |
| Transmission Control Solenoid Valve 1-9 Control Circuit Low Test Status | Not RunorOK | — |
| Transmission Control Solenoid Valve 1–9 Control Circuit Open Test Status | Not RunorOkay | — |
| Transmission Control Solenoid Valve 1 Current | Ignition On - Engine Off= 0.75<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 0.99<br>80 km/h (50 MPH) = 0.98 | A |
| Transmission Control Solenoid Valve 1 Current Command | Ignition On - Engine Off= 0.76<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 1.02<br>80 km/h (50 MPH) = 0.97 | A |
| Transmission Control Solenoid Valve 1 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 136 /20<br>48 km/h (30 MPH) = 0.00 /0.00<br>80 km/h (50 MPH) = 0.00 /0.00 | kPa / PSI |
| Transmission Control Solenoid Valve 2 Current | Ignition On - Engine Off= 0.82<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 0.99<br>80 km/h (50 MPH) = 0.92 | A |
| Transmission Control Solenoid Valve 2 Current Command | Ignition On - Engine Off= 0.83<br>Ignition On - Engine Running= 0.98<br>48 km/h (30 MPH) = 1.02<br>80 km/h (50 MPH) = 0.92 | A |
| Transmission Control Solenoid Valve 2 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 2,206 /320<br>48 km/h (30 MPH) = 0.00 /0.00<br>80 km/h (50 MPH) = 2,206 /320 | kPa / PSI |

| Parameter | Expected Value | Units |
|---|---|---|
| Transmission Control Solenoid Valve 3 Current | Ignition On - Engine Off= 0.75<br>Ignition On - Engine Running= 1.01<br>48 km/h (30 MPH) = 1.05<br>80 km/h (50 MPH) = 0.88 | A |
| Transmission Control Solenoid Valve 3 Current Command | Ignition On - Engine Off= 0.76<br>Ignition On - Engine Running= 1.02<br>48 km/h (30 MPH) = 1.06<br>80 km/h (50 MPH) = 0.89 | A |
| Transmission Control Solenoid Valve 3 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 0.00 /0.00<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 2,206 /320 | kPa / PSI |
| Transmission Control Solenoid Valve 4 Current | Ignition On - Engine Off= 1.20<br>Ignition On - Engine Running= 0.89<br>48 km/h (30 MPH) = 0.69<br>80 km/h (50 MPH) = 0.88 | A |
| Transmission Control Solenoid Valve 4 Current Command | Ignition On - Engine Off= 1.20<br>Ignition On - Engine Running= 0.89<br>48 km/h (30 MPH) = 0.70<br>80 km/h (50 MPH) = 0.89 | A |
| Transmission Control Solenoid Valve 4 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 0.00 /0.00<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 173 /25 | kPa / PSI |
| Transmission Control Solenoid Valve 5 Current | Ignition On - Engine Off= 0.04<br>Ignition On - Engine Running= 0.04<br>48 km/h (30 MPH) = 0.46<br>80 km/h (50 MPH) = 0.58 | A |
| Transmission Control Solenoid Valve 5 Current Command | Ignition On - Engine Off= 0.04<br>Ignition On - Engine Running= 0.04<br>48 km/h (30 MPH) = 0.47<br>80 km/h (50 MPH) = 0.59 | A |
| Transmission Control Solenoid Valve 5 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 0.00 /0.00<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 173 /25 | kPa / PSI |
| Transmission Control Solenoid Valve 6 Current | Ignition On - Engine Off= 0.57<br>Ignition On - Engine Running= 0.54<br>48 km/h (30 MPH) = 0.53<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 6 Current Command | Ignition On - Engine Off= 0.57<br>Ignition On - Engine Running= 0.54<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 6 Pressure Command | Ignition On - Engine Off= 0.00 /0.00<br>Ignition On - Engine Running= 2,206 /320<br>48 km/h (30 MPH) = 2,206 /320<br>80 km/h (50 MPH) = 2,206 /320 | kPa / PSI |

| Parameter | Expected Value | Units |
|---|---|---|
| Transmission Control Solenoid Valve 7 Current | Ignition On - Engine Off= 0.01<br>Ignition On - Engine Running= 0.78<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 7 Current Command | Ignition On - Engine Off= 0.01<br>Ignition On - Engine Running= 0.78<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 0.51 | A |
| Transmission Control Solenoid Valve 8 Current | Ignition On - Engine Off= 0.00<br>Ignition On - Engine Running= 0.00<br>48 km/h (30 MPH) = 0.52<br>80 km/h (50 MPH) = 0.50 | A |
| Transmission Control Solenoid Valve 8 Current Command | Ignition On - Engine Off= 0.00<br>Ignition On - Engine Running= 0.78<br>48 km/h (30 MPH) = 0.54<br>80 km/h (50 MPH) = 1.20 | A |
| Transmission Control Solenoid Valve 9 | OfforOn | — |
| Transmission Fluid Temperature Sensor | Ignition On - Engine Off= 33 /91<br>Ignition On - Engine Running= 42 /108<br>48 km/h (30 MPH) = 49 /120<br>80 km/h (50 MPH) = 63 /145 | °C/°F |
| Transmission Hot Mode | No | — |
| Transmission Park Valve Lock Solenoid Actuator | Park= Off<br>Out of Park= On | — |
| Transmission Park Valve Position Sensor | Park= 2.00<br>Out of Park= 0.80 | V |
| Transmission Park Valve Position Sensor Status | Park<br>Out of Park | — |
| Transmission Park Valve Position Sensor 2 | Park= 0.80<br>Out of Park= 1.98 | V |
| Transmission Park Valve Position Sensor 2 Status | Park<br>Out of Park | — |
| Transmission Range Control Valve Position Sensor | Park= 0.80<br>Out of Park= 1.98 | V |
| Transmission Range Control Valve Position Sensor Status | Park= Complete<br>Out of Park= Failed | — |
| Transmission Range Sensor | P = 13<br>R = 47<br>N = 61<br>D = 75<br>L = 86 | % |
| Transmission Range Sensor 2 | P = 87<br>R = 53<br>N = 39<br>D = 25<br>L = 14 | % |

| Parameter | Expected Value | Units |
|---|---|---|
| Up and Down Shift Switch | No Button Pressed= None<br>Upshift» Pressed= Upshift<br>Downshift» Pressed= Downshift | — |
| Vehicle Speed | Varies | km/h/MPH |

## Scan Tool Control Function

| Control Function | Description |
|---|---|
| Automatic Transmission Auxiliary Fluid Pump | Overrides the state of the auxiliary transmission pump relay output |
| High Side Driver& High Side Driver 2 | Overrides the state of the High Side Driver Output |
| Shift Transmission Gear | Overrides the commanded gear output |
| Torque Converter Clutch | Overrides the state of the Torque Converter Clutch Enable and/or Torque Converter Clutch Control Solenoid |
| Transmission Control Solenoid Valve 1–9 | Overrides the state of the Transmission Control Solenoid Valve — On or Off |
| Transmission Control Solenoid Valve 1–8 Current | Overrides the current of the Transmission Control Solenoid Valve — 0–1.2 A |

## Configuration/Reset Functions

| Control Function | Description |
|---|---|
| Transmission Adaptive Pressure Reset | Triggers the reset of the transmission adaptive parameters |
| Transmission Service Fast Learn | This test executes a procedure in the TCM software to re-learn a variety of inputs. |
| Vehicle Speed Detected When Park Range Selected Reset | Triggers the reset of the park at speed detection values |

## K73 Telematic Control Module: Scan Tool Information

## Telematic Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| **GPS Data** | | | |
| • Dead Reckoning Calibration Status | — | Calibrated or Not Calibrated | Indicates the dead reckoning calibration status. |
| • Position Calibration Method | — | Varies | Indicates the method used to determine current location. (0) GPS, (1) Wheel Speed Dead Reckoning only, (2) Combined Wheel Speed and GPS, (3) Gyro only, (4) Combined Gyro and GPS, (5) No Fix |
| • Month | — | MM | This displays the current month. |
| • Day | — | DD | This displays the current day of the month. |
| • Year | — | YY | This displays the current year. |
| • Hour | — | HH | This displays the GPS current hour (24 hour format – GMT). |
| • Minute | — | MM | This displays the GPS current minute. |
| • Second | — | SS | This displays the GPS current second. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| • Number of Satellites Tracked | — | Varies | The scan tool displays the number of satellites being tracked by the Telematic Control Module. |
| **Signal Strength Data** | | | |
| • GSM Signal Strength | — | Varies | The scan tool displays 0–127. This is the Telematic Control Module signal strength. |
| • Current Public Land Mobile Network | — | Varies | Identifies the cellular communications network currently in use by the Telematic Control Module. Each network has a unique decimal number assigned to it for identification. |
| **Bluetooth Data** | | | |
| • Bluetooth | — | Enabled | Indicates if the Bluetooth system is enabled or disabled. |
| • Bluetooth Link Status | — | Varies | Indicates the current link status. (0) Unconnected, (1) Connected / Idle, (2) Call active, (3) 3-way calling active |
| • Bluetooth Link Quality | — | Varies | The scan tool displays a decimal value between 0 and 255. |
| • Bluetooth Phone to Telematic Control Module Authentication Status | — | Active or Inactive | Displays the bluetooth phone to Telematic Control Module authentication status. |
| • Bluetooth Phone to Telematic Control Module Communication Status | — | Active or Inactive | Displays the bluetooth phone to Telematic Control Module status. |
| • Bluetooth Phone Voice Recognition Status | — | Active or Inactive | Displays the bluetooth phone to voice recognition status. |
| **WLAN Device Data** | | | |
| Off-Board Navigation | — | Enabled or Disabled | Indicates if Off-Board Navigation is enabled or disabled |
| Wireless LAN | — | Enabled or Disabled | Indicates the capability of the wireless communication of the Telematic Control Module |
| Number of WLAN Devices | — | Varies | Indicates the number of Wireless devices present |
| Active WLAN 2.4GHz Chennel | — | Varies | Indicates the active Wireless channel being used on the 2.4 GHz frequency |
| WLAN Link Status | — | Radio System – Never, Remembered but Not Associated or Associated | Indicates the link status of the Telematic Control Module and Infotainment system |
| GSM Signal Strength | — | Varies | State for Received Signal Strength Indicator |
| Mobile Communication Standard | — | 2G, 3G, 4G or 4G LTE | State for Cellular Data Connection. Indicates the currently used data rate speed |
| WLAN Password | — | Varies | Indicates the Telematic Control Module Wireless Password |
| WLAN SSID (Service Set Identifier) | — | Varies | Indicates the Telematic Control Module Wireless Service Name |
| WLAN Encryption – WPA (Wi–Fi Protected Access) | — | Active or Inactive | Indicates if the WLAN Encryption – WPA (Wi–Fi Protected Access) is Active or Inactive |
| WLAN Encryption – WPA2 (Wi–Fi Protected Access II) | — | Active or Inactive | Indicates if the WLAN Encryption – WPA2 (Wi–Fi Protected Access II) is Active or Inactive |
| WLAN Encryption – AES (Advanced Encryption Standard) | — | Active or Inactive | Indicates if the WLAN Encryption – AES (Advanced Encryption Standard) is Active or Inactive |
| WLAN Encryption – TKIP (Temporal Key Intergrity Protocol) | — | Active or Inactive | Indicates if the WLAN Encryption – TKIP (Temporal Key Integrity Protocol) is Active or Inactive |

### Telematic Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| B1000 Information | This shows the data recorded when DTC B1000 was set in the Telematic Control Module. |
| Green Indicator | The Telematic Control Module illuminates the green LED when ON is selected. |
| Phone Call Test | When ON is selected, Telematic Control Module commands OnStar to connect to the OnStar Center. |
| Red Indicator | The Telematic Control Module illuminates the red LED when ON is selected. |
| Preferred Roaming List Update | The Telematic Control Module performs a preferred roaming list (PRL) update when this is selected. |
| Remote Vehicle Speed Limiting Reset | This function resets the speed limiting feature. |

## K85P Restraints Occupant Classification System Module - Passenger: Scan Tool Information

### Restraint Occupant Classification System Module Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Base Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the ROCSM which is stored in non volatile memory. |
| Battery Voltage | Volts | The scan tool will display battery voltage. |
| Calibration Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the calibration file in the ROCSM. |
| End Model Part Number | Varies, 8 Digit Number | The scan tool displays the part number of the ROCSM in production. |
| Manufacturer's Traceability Number | Varies, 16 Digit Number | The scan tool displays the 16 digit traceability number in the ROCSM. |
| Passenger Air Bag Enable/Disable Request by Restraint Occupant Classification System Module | Disable | The scan tool displays the Passenger Air Bag Enable/ Disable Request by Restraint Occupant Classification System Module. |
| Restraint Occupant Classification Module Primary Key | Hex Value | The scan tool indicates the primary key Hex value. |
| Restraint Occupant Classification System Reporting DTC(s) | Yes/No | The ROCSM will report if there are DTCs set in the Restraint Occupant Classification module. |
| Passenger Seat Occupancy Status | Empty Seat | The scan tool displays Undefined, Empty Seat, Occupied, or Invalid. This is the state of the passenger seat if it is occupied or empty and monitored by the Restraint Occupant Classification System. |
| Power Mode | Off / Accessory / Run / Crank Request | The scan tool will display the power mode of the vehicle. |
| Primary Key Status | Valid/Invalid | The scan tool displays Valid if the primary key matches what is stored to memory in the ROCSM. |
| Received Primary Key | Hex Value | The scan tool displays a Hex value indicating the ROCSM received primary key data. |
| Software Part Number | Varies, 8 Digit Number | The scan tool displays the software part number in the ROCSM. |

## K124 Image Processing Module: Scan Tool Information (UGN)

### Image Processing Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Vehicle in Run power mode, engine off. | | | |
| Steering Wheel Angle Sensor Learn Status | — | Learned | This displays the current learn status of the steering wheel angle sensor |
| Lane Keep Assist Malfunction Detection Status | — | OK | This displays whether or not there is a current malfunction detected in the Lane Keep Assist system. |
| Frontview Camera - Windshield Lane Detection Status | — | OK | This displays the current lane detection status of the Frontview Camera. |
| Power Steering System Assist Status | — | OK | This displays the current readiness status of the power steering assist system. |
| Power Steering System Status | — | OK | This displays the current status of the power steering system. |
| Active Rear Steering System Status | — | OK | This displays the current status of the active rear steering system |
| Lane Keep Assist Disabled By External Input | — | No | This displays whether or not there is an external input disabling the Lane Keep Assist system. |
| Lane Keep Assist Disabled By Switch Input | — | No | This displays whether or not there is a switch input disabling the Lane Keep Assist system. |
| Trailer Detected | — | No | This displays whether or not there is a trailer detected by the system. |
| Emergency Braking Active | — | No | This displays whether or not emergency braking is active. |
| Traction Control Active | — | No | This displays whether or not traction control is active. |
| Vehicle Stability Control Active | — | No | This displays whether or not the vehicle stability control is active. |
| ABS Active | — | No | This displays whether or not the ABS system is active. |
| Vehicle Speed Too High or Low | — | No | This displays whether or not the vehicle speed is too high or too low. |
| Power Mode Set to Run | — | Yes | This displays whether or not the vehicle power mode is set to RUN. |
| Vehicle Stability Control System Status | — | Ready to Assist | This displays the readiness status of the vehicle stability control system. |
| Unreliable Lane Markings - Right Side | — | No | This displays if the driver assist system is detecting unreliable lane markings to the right side of the vehicle. |
| Unreliable Lane Markings - Left Side | — | No | This displays if the driver assist system is detecting unreliable lane markings to the left side of the vehicle. |
| Lane Curvature Right too High | — | No | This displays if the driver assist system is detecting a curve that is too tight on the right side of the vehicle. |
| Lane Curvature Left too High | — | No | This displays if the driver assist system is detecting a curve that is too tight on the left side of the vehicle. |
| Rural Road | — | Not Detected | This displays whether or not a rural road is detected. |
| Construction Area | — | Not Detected | This displays whether or not a construction zone is detected. |
| Hands-Free Steering Wheel Driving Detected | — | No | This displays whether or not the drivers hand is detected on the steering wheel. |
| Excessive Lateral Acceleration Detected | — | No | This displays whether or not the vehicle detects an excessive lateral movement. |
| Lane Curvature Error - Right Side | — | No | This displays whether or not the driver assist system detects an error while following a right curving road. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Lane Curvature Error - Left Side | — | No | This displays whether or not the driver assist system detects an error while following a left curving road. |
| Lane Marking Width Error - Right Side | — | No | This displays whether or not the driver assist system detects an error with the size of lane markings on the right side of the vehicle. |
| Lane Marking Width Error - Left Side | — | No | This displays whether or not the driver assist system detects an error with the size of lane markings on the left side of the vehicle. |
| Lane Marking Position Error - Right Side | — | No | This displays whether or not the driver assist system detects an error with the positioning of lane markings on the right side of the vehicle. |
| Lane Marking Position Error - Left Side | — | No | This displays whether or not the driver assist system detects an error with the positioning of lane markings on the left side of the vehicle. |
| Lane Marking Quality - Right Side | — | OK | This displays whether the quality of lane markings on the right side of the vehicle are adequate. |
| Lane Marking Quality - Left Side | — | OK | This displays whether the quality of lane markings on the left side of the vehicle are adequate. |
| Lane Width | — | OK | This displays whether the width of the current road lane is adequate. |
| Lane Keep Assist Switch Status | — | OK | This displays the current status of the lane keep assist switch. |
| Left and Right Lane Markings | — | Detected | This displays the detection status of lane markings on the left and right side of the vehicle. |
| Lane Curvature Not Plausible | — | No | This displays the plausibility of expected road curvature vs observed by the system. |
| Lane Curvature Rate - Right | — | OK | This displays the curvature to the right as either OK or Excessive |
| Lane Curvature Rate - Left | — | OK | This displays the curvature to the left as either OK or Excessive |
| Look Ahead Distance Further Than View Range - Right | — | No | This displays whether or not the vehicle distance to an object on the right side of the vehicle is greater than the frontview camera’s field of view. |
| Look Ahead Distance Further Than View Range - Left | — | No | This displays whether or not the vehicle distance to an object on the left side of the vehicle is greater than the frontview camera’s field of view. |
| Brake Pedal Position Signal Invalid | — | No | This displays the validity of the brake pedal position sensor signal. |
| Accelerator Pedal Position Signal Invalid | — | No | This displays the validity of the accelerator pedal position sensor signal. |
| Transmission Gear Status Invalid | — | No | This displays the validity of the transmission gear status. |
| Yaw Rate Signal Invalid | — | No | This displays the validity of the yaw rate signal. |
| Lateral Acceleration Rate Signal Invalid | — | No | This displays the validity of the lateral acceleration rate signal. |
| Driver Applied Steering Torque Signal Invalid | — | No | This displays the validity of the driver applied steering torque signal. |
| Hands-Free Steering Wheel Detection Signal Invalid | — | No | This displays the validity of the hands-free steering wheel detection signal. |
| Steering Torque Overlay Signal Invalid | — | No | This displays the validity of the steering torque overlay signal. |
| ABS Status | — | Ready to Assist | This displays the readiness status of the ABS system. |
| Teen Driver Signal Invalid | — | No | This displays the validity of the teen driver signal. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Traction Control System Status Signal Invalid | — | No | This displays the validity of the traction control system status signal. |
| Traction Control Status | — | Ready to Assist | This displays the readiness status of the traction control system. |
| Vehicle Stability Control System Status Signal Invalid | — | No | This displays the validity of the vehicle stability control system status signal. |
| Steering Wheel Angle Sensor Signal Invalid | — | No | This displays the validity of the steering wheel angle sensor signal. |
| Vehicle Speed Signal Invalid | — | No | This displays the validity of the vehicle speed signal. |
| Vehicle Stability Control System Disabled by Driver | — | No | This displays whether or not the vehicle stability control system has been disabled by the driver. |
| Super Cruise Engaged | — | No | This displays whether or not the Super Cruise system is engaged. |
| Side Object Detection Status | — | OK | This displays the current status of the Side Object Detection system. |
| Construction Zone Detection Signal Invalid | — | No | This displays the validity of the construction zone detection signal. |
| Power Mode Signal Status Invalid | — | No | This displays the validity of the vehicle power mode signal. |
| Turn Signal Switch Signal Invalid | — | No | This displays the validity of the turn signal switch signal. |
| Trailer Connected Signal Invalid | — | No | This displays the validity of the trailer connection signal. |
| Time to Collision Signal Invalid | — | No | This displays the validity of the time to collision signal. |
| ABS Status Signal Invalid | — | No | This displays the validity of the ABS status signal. |
| Power Mode | — | Run | This displays the current power mode of the vehicle. This can read OFF, Accessory, RUN, Start, or Propulsion Active. |

**Drivers Assist System Disable History Conditions**
Refer to [Link target (target-id 331106-) not found] for a list of all available conditions that can cause the driver assist systems functions to be inhibited or disabled.

## Lane Keep Assist Event History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module | Lane Keep Assist Event History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module | Lane Keep Assist Event History 1-8 | Blank | Blank | |
| Image Processing Module | Lane Keep Assist Event History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module | Lane Keep Assist Event History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module | Lane Keep Assist Event History 1-8 Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module | Lane Keep Assist Event History 1-8 Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

## Front Impact Mitigation Event History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module | Front Impact Mitigation Event History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module | Front Impact Mitigation Event History 1-8 | Blank | Blank | |
| Image Processing Module | Front Impact Mitigation Event History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module | Front Impact Mitigation Event History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |
| Image Processing Module | Front Impact Mitigation Event History 1-8 - Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module | Front Impact Mitigation Event History 1-8 - Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

## Adaptive Cruise Control Disengage History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module | Adaptive Cruise Control Disengage History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module | Adaptive Cruise Control Disengage History 1-8 | Blank | Blank | |
| Image Processing Module | Adaptive Cruise Control Disengage History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module | Adaptive Cruise Control Disengage History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module | Adaptive Cruise Control Disengage History 1-8 Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module | Adaptive Cruise Control Disengage History 1-8 Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

### Adaptive Cruise Control Inhibit History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module | Adaptive Cruise Control Inhibit History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module | Adaptive Cruise Control Inhibit History 1-8 | Blank | Blank | |
| Image Processing Module | Adaptive Cruise Control Inhibit History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module | Adaptive Cruise Control Inhibit History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |
| Image Processing Module | Adaptive Cruise Control Inhibit History 1-8 Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module | Adaptive Cruise Control Inhibit History 1-8 Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

## K124 Image Processing Module: Scan Tool Information (UKL)

**Note:** Due to software and hardware variations, not all information may be applicable.

### Image Processing Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Vehicle in Run power mode, engine off. | | | |
| Lane Keep Assist Status | — | Enabled | This displays the current status of the Lane Keep Assist system. |
| Super Cruise Status | — | OFF | This displays the current status of the Super Cruise system. |
| Adaptive Cruise Control Status | — | OFF | This displays the current status of the Adaptive Cruise Control system. |
| Heated Steering Wheel Auto Command | — | OFF | This displays the current status of the automatic heated steering wheel system. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Vehicle Dynamic Sensor Orientation Calibration Status | — | Calibrated | This displays the current calibration status as either “Calibrated”, “In Progress”, or “Not Calibrated” |
| Vehicle Dynamic Sensor Offset Calibration Status | — | Calibrated | This displays the current calibration status as either “Calibrated”, “In Progress”, or “Not Calibrated” |
| Steering Wheel Touch Sensing | — | Inactive | This displays the current calibration status as either “Calibrated” or “Not Calibrated” |
| Steering Wheel Light Bar Color Command | — | OFF | This displays the current status of the steering wheel LED light bar color.. |
| Power Mode | — | ACCESSORY | This displays the current power mode of the vehicle as “OFF”, “ACCESSORY”, “RUN”, or “START REQUEST” |

**Drivers Assist System Disable History Conditions**

Refer to [Link target (target-id 331106-) not found] for a list of all available conditions that can cause the driver assist systems functions to be inhibited or disabled.

### Environmentally Induced Disengagement Event History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module - Processor 1 and Processor 2 | Environmentally Induced Disengagement Event History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module - Processor 1 and Processor 2 | Environmentally Induced Disengagement Event History 1-8 | Blank | Blank | Disable reason |
| Image Processing Module - Processor 1 and Processor 2 | Environmentally Induced Disengagement Event History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module - Processor 1 and Processor 2 | Environmentally Induced Disengagement Event History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |
| Image Processing Module - Processor 1 and Processor 2 | Environmentally Induced Disengagement Event History 1-8 Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module - Processor 1 and Processor 2 | Environmentally Induced Disengagement Event History 1-8 Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

## Automatically Induced Disengagement Event History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module - Processor 1 and Processor 2 | Automatically Induced Disengagement Event History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module - Processor 1 and Processor 2 | Automatically Induced Disengagement Event History 1-8 | Blank | Blank | Disable reason |
| Image Processing Module - Processor 1 and Processor 2 | Automatically Induced Disengagement Event History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module - Processor 1 and Processor 2 | Automatically Induced Disengagement Event History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |
| Image Processing Module - Processor 1 and Processor 2 | Automatically Induced Disengagement Event History 1-8 - Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module - Processor 1 and Processor 2 | Automatically Induced Disengagement Event History 1-8 - Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

## Driver Induced Disengagement Event History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module - Processor 1 and Processor 2 | Driver Induced Disengagement Event History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module - Processor 1 and Processor 2 | Driver Induced Disengagement Event History 1-8 | Blank | Blank | Disable reason |
| Image Processing Module - Processor 1 and Processor 2 | Driver Induced Disengagement Event History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module - Processor 1 and Processor 2 | Driver Induced Disengagement Event History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |
| Image Processing Module - Processor 1 and Processor 2 | Driver Induced Disengagement Event History 1-8 Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module - Processor 1 and Processor 2 | Driver Induced Disengagement Event History 1-8 Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

### Lane Change on Demand Inhibited Event History

| Control Module | Parameter Name | Normal Value | Unit | Description |
|---|---|---|---|---|
| Image Processing Module - Processor 1 and Processor 2 | Lane Change on Demand Inhibited Event History 1-8 - Status | Blank | Blank | The status of the diagnostic |
| Image Processing Module - Processor 1 and Processor 2 | Lane Change on Demand Inhibited Event History 1-8 | Blank | Blank | Inhibit reason |
| Image Processing Module - Processor 1 and Processor 2 | Lane Change on Demand Inhibited Event History 1-8 - Ignition Cycles Since Last Diagnostic Event | Blank | Counts | Ignition Cycles Since Last Diagnostic Event |
| Image Processing Module - Processor 1 and Processor 2 | Lane Change on Demand Inhibited Event History 1-8 - Malfunction Counter | Blank | Counts | Number of malfunctions |
| Image Processing Module - Processor 1 and Processor 2 | Lane Change on Demand Inhibited Event History 1-8 Odometer at First Malfunction | Blank | km | Odometer at First Malfunction/failure |
| Image Processing Module - Processor 1 and Processor 2 | Lane Change on Demand Inhibited Event History 1-8 Odometer at Last Malfunction | Blank | km | Odometer at Last Malfunction/failure |

### Image Processing Module Output Controls

| Output Control | Description |
|---|---|
| Vehicle Dynamic Sensor Offset Calibration | Learns the initial bias values for roll, yaw, and pitch rate for the multi-axis acceleration sensor. |
| Steering Wheel Light Bar | Requests the steering wheel light bar LED color and flash rate. |

## K160 Brake System Control Module: Scan Tool Information

The Electronic Brake Control Module (EBCM) scan tool data parameters list contains all ABS related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

### Brake System Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| ABS Active SIgnal | | OK/Malfunction | Determine the state of the ABS system |
| ABS Pump Motor Voltage | | 0 V | The scan tool displays the commanded pump motor voltage. |
| Actual Brake System Plunger Motor Torque | | Varies | The scan tool displays the motor torque feedback. |
| Actual Brake System Plunger Position | | Varies | The scan tool displays Plunger Position Feedback |
| Actual Brake System Plunger Speed | | Varies | The scan tool displays Plunger Speed Feedback |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| All Wheel Drive | | Active/Inactive | The scan tool displays when in four wheel drive (if equipped). |
| Antilock Braking System | | OK/Malfunction | The scan tool displays OK or Malfunction. Malfunction is displayed if there is an ABS malfunction. |
| Automatic Brake Control Gain Request from Brake System Control Module | | Varies | The scan tool displays a percentage of Autonomous Control Gain Request from BSCM |
| Automatic Braking Event | | Detected/Not Detected | The scan tool displays Automatic Trailer Braking Event |
| Automatic Brake Request from Brake System Control Module | | Yes/No | The scan tool displays Trailer Brake Autonomous Control Status |
| Automatic Braking Active Signal | | Okay/ Malfunction | ABS Active Malfunction indicates invalid protected ABS active data received from Automatic Brake System Control Module |
| Automatic Braking Torque Signal | | Okay/ Malfunction | The scan tool displays Automatic Brake Torque Signal Failure |
| Autonomous Braking Request Signal | | Okay/ Malfunction | Autonomous Signal malfunction indicates invalid autonomous braking data received from Automatic Brake System Control Module |
| Brake Fluid Level Sensor | | Okay/Low | The scan tool displays OK when the brake fluid is at correct level and Low when the brake fluid is low. |
| Brake Fluid Reservoir Seperating Solenoid Valve | | Active/Inactive | The scan tool displays Eboost System Internal Valves Feedback Status Reservoir Seperation Valve Commanded |
| Brake Master Cylinder Separating Solenoid Valve 1 | | Active/Inactive | The scan tool displays Eboost System Internal Valves Feedback Status Circuit Seperating Valve 1 Commanded. |
| Brake Master Cylinder Separating Solenoid Valve 2 | | Active/Inactive | The scan tool displays Eboost System Internal Valves Feedback Status Circuit Seperating Valve 2 Commanded |
| Brake Pad Wear Malfunction Signal | | None<br>Propulstion Active,<br>Vehicle Speed,<br>Malfunction,<br>Reset | The scan tool displays the Brake Pad Life Monitoring Axle Reset Reject Reason |
| Brake Pad Wear Signal | | Low/High | The scan tool displays Brake Pad Wear Input Status |
| Brake Pedal Position Sensor | Brake pedal released | Inactive | The scan tool displays Inactive or Active depending on the state of the brake pedal. |
| | Brake pedal applied | Active | |
| Brake Pedal Simulator Separating Solenoid Valve | | Active/Inactive | System Internal Valves Feedback Status Simulator Separating Valve Commanded |
| Brake Pressure Signal | | Okay/ Malfunction | The scan tool displays Brake Pressure Signal Failure |
| Brake System | | Active/Inactive | The scan tool displays the boost status. |
| Brake System Plunger Motor Resistance | | Varies | The scan tool displays the calculated Motor Resistance |
| Brake System Plunger Motor Temperature 1 | | Varies | The scan tool displays the Module Motor Driver Temperature CH1 |
| Brake System Plunger Motor Temperature 2 | | Varies | The scan tool displays the Module Motor Driver Temperature CH2 |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Brake System Plunger Separating Solenoid Valve 1 | | Active/Inactive | The scan tool displays System Internal Valves Feedback Status Plunger Separating Valve 1 Commanded. |
| Brake System Plunger Separating Solenoid Valve 2 | | Active/Inactive | System Internal Valves Feedback Status Plunger Separating Valve 2 Commanded |
| Brake Pressure | | Varies | The scan tool displays brake apply pressure. |
| Brake Pressure Created by Applying Brake Pedal | | Varies | The scan tool displays Brake Pedal Driver Applied Pressure |
| Brake Pressure Sensor | Brake pedal released | 0–1 V | The scan tool displays 0–5 V depending on the applied hydraulic brake pressure. |
| | Brake pedal applied | 1–5 V | |
| Brake Pressure Sensor | Brake pedal released | 2000–3000 kPa | The scan tool displays the actual pressure applied to the brake pedal. |
| Brake Pressure Test | | Incomplete,<br>Active,<br>Complete,<br>Failed | The scan tool displays the Wheel Pressure Control Feedback Test Status |
| Brake System Plunger Motor Current Limitation | | Active/Inactive | Eboost Motor Current Limitation |
| Brake System Plunger Motor Status | | Active/Inactive | The scan tool displays if the Eboost Motor Status has limitations. |
| Brake System Plunger Motor Temperature Limitation | | Active/Inactive | Eboost Motor Temperature Limitation |
| Brake System Plunger Motor Torque Limitation | | Active/Inactive | Eboost Motor Torque Limitation |
| Brake System Plunger Travel | | Varies | The scan tool displays the plunger travel. |
| Calculated Input rod Position | | Varies | The scan tool displays the EBoost Input Rod Stroke - Calculated |
| Delivered Torque | | Varies | The scan tool displays 0–100% depending on the how much torque the engine is delivering. |
| Desired Trailer Brake Control Duty Cycle | | OK/Malfunction | The banded trailer brake duty cycle sent to the Trailer Brake Module. It represents the requested duty cycle as transformed to allow diagnostics on the transmission line |
| Desired Brake System Plunger Position | | Varies | The scan tool displays the command Plunger Position |
| Desired Brake System Plunger Speed | | Varies | The scan tool displays the commanded Plunger Speed. |
| Desired Brake System Plunger Motor Torque | | Varies | The scan tool displays the commanded Motor Torque. |
| Deviation Between Manual Trailer Brake Apply Request Signal 1 and 2 | | Varies | The scan tool displays Trailer Brake Manual Apply Switch Position Error |
| Diagnostic Mode | | Active/Inactive | Diagnostic Mode Status |
| Driver Initiated Brake Event | | Not Detected/ Detected | The scan tool displays Brake Event Detected |
| Dynamic Rear Proportioning Status | | Okay/ Malfunction | The scan tool displays Dynamic Rear Proportioning System Failure Status |
| Engine Drag Control Status | | Okay/ Malfunction | The scan tool displays Engine Drag Control Status |
| Front Brake Pad Wear Sensors | | Varies | The scan tool displays Front Axle Brake Pad Wear Sensor Voltage |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Induced Voltage by Trailer Brake Coil | | Varies | The scan tool displays Inductance Measurement Voltage |
| Input Rod Position 1 | | Varies | The scan tool display the position of the Input Rod Stroke 1 |
| Input Rod Position 2 | | Varies | The scan tool display the position of the Input Rod Stroke 2 |
| Input Rod Position Sensors 1 and 2 Supply Voltage | | Varies | The scan tool display the Brake Pedal Postion Sensor Reference Voltage |
| Lateral Acceleration | | Varies | The scan tool displays 0–5 V depending on the vehicle's lateral acceleration. |
| Left Front Inlet Solenoid Valve Feedback | | Inactive/Active | Active is displayed when the left front inlet solenoid valve is commanded ON. |
| Left Front Outlet Solenoid Valve Feedback | | Inactive/Active | Active is displayed when the left front outlet solenoid valve is commanded ON. |
| Left Front Wheel Speed | | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the left front wheel speed sensor. |
| Left Front Brake Pressure | | Varies | The scan tool displays the left front wheel pressure |
| Left Park Brake Actuator Force | | Varies | The scan tool displays the Left Park Brake Actuator force |
| Left Park Brake Actuator Status | | Released, Applied, Malfunction, Service Release, Releasing, Applying, Unknown | The scan tool displays the Left Park Brake Actuator Status |
| Left Park Brake Actuator Voltage | | Varies | The scan tool displays the Left Park Brake Actuator voltage |
| Left Rear Brake Pressure | | Varies | The scan tool displays the left rear wheel pressure |
| Left Rear Inlet Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the left rear inlet solenoid valve is commanded ON. |
| Left Rear Outlet Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the left rear outlet solenoid valve is commanded ON. |
| Left Rear Wheel Speed | | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the left rear wheel speed sensor. |
| Limited Brake Function - Only Limited Brake Pressure Available | | Active/Inactive | The scan tool displays Partial Boost status |
| Limited Brake Function - Low Voltage Condition | | Active/Inactive | The scan tool displays Low Voltage Boost Status |
| Limited Brake Function - Only One Brake Circuit Available | | Active/Inactive | The scan tool displays half system boost status. |
| Longitudinal Acceleration | | Varies | The scan tool displays the vehicle's longitudinal acceleration. |
| Manual Trailer Brake | | Released/ Applied | Trailer Braking Signals Status Manual Trailer Brake Applied |
| Manual Trailer Brake Apply Request Signal 1 | | OK/Malfunction | Trailer Brake Primary Manual Apply Switch Position |
| Manual Trailer Brake Apply Request Signal 2 | | OK/Malfunction | Trailer Brake Redundant Manual Apply Switch Position |
| Module Temperature | | Varies | The scan tool displays the Bake System Control Module Temperature. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Normal Braking Mode | | Active/Inactive | The scan tool displays if the vehicle is in normal braking mode. |
| Park Brake Actuator | | Active/Inactive | The scan tool displays the Electric Park Brake Motor Status |
| Park Brake Actuator Direction | | Released/ Applied | The scan tool displays the Electric Park Brake Motor Status |
| Panic Brake Assist Status | | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if the EBCM disables the panic brake assist due to a fault. |
| Park Brake Mode | | Active/Inactive | The scan tool displays if in Shut Down Boost status |
| Park Brake Switch | | Active/Inactive | The scan tool displays the status of the Electric Park Brake Switch |
| Pump Motor Relay Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the pump motor is commanded ON. |
| Primary Isolation Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON. |
| Primary Prime Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON. |
| Rear Brake Pad Wear Sensors | | Varies | The scan tool displays the remaining percentage of brake pad. |
| Redundant Trailer Brake Manual Apply Slider | | Varies | The scan tool displays Manual Apply Switch Voltage. |
| Regenerative Braking Axle Torque Request | | Varies | The scan tool displays Regenerative Braking Axle Torque Request |
| Regenerative Braking, Stability or Traction Control Disable History 1 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 1 |
| Regenerative Braking, Stability or Traction Control Disable History 2 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 2 |
| Regenerative Braking, Stability or Traction Control Disable History 3 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 3 |
| Regenerative Braking, Stability or Traction Control Disable History 4 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 4 |
| Regenerative Braking, Stability or Traction Control Disable History 5 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 5 |
| Regenerative Braking, Stability or Traction Control Disable History 6 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 6 |
| Regenerative Braking, Stability or Traction Control Disable History 7 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 7 |
| Regenerative Braking, Stability or Traction Control Disable History 8 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 8 |
| Regenerative Braking, Stability or Traction Control Disable History 9 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 9 |
| Regenerative Braking, Stability or Traction Control Disable History 10 | | Varies | The scan tool displays Regenerative Braking, Stability or Traction Control Disabling ECU History 10 |
| Requested Torque | | Varies | The scan tool displays 0–100% depending on the how much torque is requested. |
| Right Front Brake Pressure | | Varies | The scan tool displays the right front wheel pressure. |
| Right Front Inlet Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right front inlet solenoid valve is commanded ON. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Right Front Outlet Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right front outlet solenoid valve is commanded ON. |
| Right Front Wheel Speed | | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the right front wheel speed sensor. |
| Right Park Brake Actuator Force | | Varies | Scan tool displays the Right Park Brake Actuator force |
| Right Park Brake Actuator Status | | Released, Applied, Malfunction, Service Release, Releasing, Applying, Unknown | Scan tool displays the Right Park Brake Actuator Status |
| Right Park Brake Actuator Voltage | | Varies | Scan tool displays the Right Park Brake Actuator voltage |
| Right Rear Brake Pressure | | Varies | The scan tool displays the right rear wheel pressure. |
| Right Rear Inlet Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right rear inlet solenoid valve is commanded ON. |
| Right Rear Outlet Solenoid Valve Feedback | | Inactive | The scan tool displays Inactive or Active. Active is displayed when the right rear outlet solenoid valve is commanded ON. |
| Right Rear Wheel Speed | | 0 km/h (0 MPH) | The scan tool displays km/h (MPH) depending on the current speed of the right rear wheel speed sensor. |
| Roller Test Stand Mode | | Active/Inactive | The scan tool displays dyno mode status |
| Secondary Isolation Solenoid Valve Feedback | | Active/Inactive | The scan tool displays Inactive or Active. Active is displayed when the isolation solenoid valve is commanded ON. |
| Secondary Prime Solenoid Valve Feedback | | Active/Inactive | The scan tool displays Inactive or Active. Active is displayed when the prime solenoid valve is commanded ON. |
| Shutdown Mode | | Active/Inactive | The scan tool displays if in shutdown mode |
| Stop Lamp Signal | | Not Requested/ Requested | The scan tool displays Brake Lights Requested |
| Steering Wheel Angle | Steering wheel in straight position | −5 to +5° | The scan tool displays °. This is the current position of the steering angle sensor. |
| | Steering wheel turned left until stop | 450–550° | |
| | Steering wheel turned right until stop | −550 to −450° | |
| System Voltage | — | 11–14 V | The scan tool displays V. This is the current battery voltage. |
| Traction Control Switch | Traction control switch released | Inactive | The scan tool displays Inactive or Active depending on the traction control switch status. |
| | Traction control switch pressed | Active | |
| Traction Control System | | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if there is a traction control malfunction. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Trailer Brake Automatic Control State | | Normal,<br>Active,<br>Temporarily Limited,<br>Permanently Failed,<br>Communication Failed,<br>Off,<br>No Signal | Trailer Brake Autonomous Control Status Autonomous Control Feedback State |
| Trailer Brake Control | | Disabled,<br>Inactive,<br>Normal Brake Mode,<br>High Brake Mode,<br>Manual Apply Brake Mode,<br>Brake in Autonomous Mode,<br>Undefined | The Scan tool displays Trailer Braking Arbitration State |
| Trailer Brake Control Output Circuit | | Indeterminate,<br>Voltage too High,<br>Voltage too Low,<br>Okay | The Scan tool displays Trailer Brake Control Output State |
| Trailer Brake Manual Apply Slider | | Varies | The scan tool displays the trailer brake slider position as a percentage |
| Trailer Brake Power Control Module | | De-Energized/ Energized | Trailer Brake Control Status Energized |
| Trailer Brake Power Control Module Battery Voltage | | Varies | The scan tool displays Trailer Brake Power Control Module Battery Voltage. |
| Trailer Brake Sensitivity | | Varies | The scan tool displays Trailer Brake User Gain |
| Trailer Brake Sensitivity Switch Up Button | | Active/Inactive | The scan tool displays Trailer Brake Control Switch User Gain Button States |
| Trailer Brake Type | | Unknown,<br>Electrical,<br>Electrohydraulic | The scan tool displays Trailer Connection Status |
| Vehicle Stability System | | OK | The scan tool displays OK or Malfunction. Malfunction is displayed if there is a stability control malfunction. |
| Vehicle Stability Enhancement System Signal | | | |
| Vehicle Stability Enhancement System Switch | Traction control switch released | Inactive | The scan tool displays Inactive or Active depending on the traction control switch status. |
| | Traction control switch pressed | Active | |
| Wheel Speed Signal | | Okay/ Malfunction | The scan tool displays Wheel Speed Signal Failure |
| Yaw Rate Signal | | Varies | The scan tool displays 0–5 V depending on the vehicle's yaw rate. |

## Brake System Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Automated Brake Bleed | This is used in order to bleed ABS hydraulics. |
| Brake Hydraulics Test | This is used to check for leaks or air in the system. |
| Brake System Hydraulic Corner Test | Commands brake hydraulic pressure to each corner. |
| Deactivate Brake Boost System | This is used to deactivate brake boost system before performing certain functions. |
| Left Park Brake Actuator | Commands the left park brake actuator ON or OFF. |
| Right Park Brake Actuator | Commands the right park brake actuator ON or OFF. |
| Deactivate Rear Park Brake Service Position | Commands the caliper piston back into position after servicing the rear brakes, |
| Activate Rear Park Brake Service Position | Retracts the caliper piston to service the rear brakes. |
| Trailer Brake Control Signal | Commands the trailer brakes on and off |
| Trailer Brake Duty Cycle | Controls the battery output voltage to the trailer brakes. |
| Trailer Brake Switch Indicator | Conmands the Trailer Brake Switch Indicator on or off |

## K164 Differential Control Module: Scan Tool Information

### Differential Control Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Ignition is ON, engine OFF, vehicle stationary | | | |
| Axle Torque | Nm | Varies | The scan tool displays the Axle Torque. |
| Application Software Part Number 1 | — | Varies | The scan tool displays Application Software Part Number 1. |
| Application Software Part Number 1 Alpha Code | — | Varies | The scan tool displays the Application Software Part Number 1 Alpha Code. |
| Base Model Part Number | — | Varies | The scan tool displays the base model part number of the module. |
| Base Model Part Number Alpha Code | — | Varies | The scan tool displays the Base Model Part Number Alpha Code. |
| Boot Software Part Number 1 | — | Varies | The scan tool displays the Boot Software Part Number 1 |
| Boot Software Part Number 1 Alpha Code | — | Varies | The scan tool displays the Boot Software Part Number 1 Alpha Code. |
| Calibration Part Number 1 | — | Varies | The scan tool displays the Calibration Part Number 1. |
| Calibration Part Number 1 Alpha Code | — | Varies | The scan tool displays the Calibration Part Number 1 Alpha Code. |
| Clutch Wear | Degree | Varies | The scan tool displays the Clutch Wear. |
| Control Module Voltage | V | Varies | The scan tool displays the Control Module Voltage. |
| Control Module Voltage Signal | V | Varies | The scan tool displays the Control Module Signal Voltage. |
| Date Programmed | Julian Date | Varies | The scan tool displays the date the module was programed. |
| Delivered Torque | Nm | Varies | The scan tool displays the Delivered Torque (0–2047 Nm). |
| Delivered Torque | % | Varies | The scan tool displays the Delivered Torque (0–15 %). |
| Diagnostic Data Identifier | — | — | The scan tool displays XXXX. |
| End Model Part Number | — | Varies | The scan tool displays the End Model Part Number. |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| End Model Part Number Alpha Code | — | Varies | he scan tool displays the End Model Part Number Alpha Code. |
| Engine Off Time | Minutes | Varies | The scan tool displays the Engine Off Time. |
| Last Dealer Code or Scan Tool Serial Number | — | Varies | The scan tool displays the Last Dealer Code or Scan Tool Serial Number. |
| Left Rear Wheel Speed | rps | Varies | The scan tool displays 0-16383 rev/s. |
| Manufacturer Enable Counter | — | Varies | The scan tool displays the Manufacturer Enable Counter. |
| Manufacturer’s Traceability Number | — | Varies | The scan tool displays the Manufacturer Enable Counter. |
| Module Diagnostic Address | — | Varies | The scan tool displays the Module Diagnostic Address. |
| Module Temperature | Nm | Varies | The scan tool displays the Left Rear Differential Clutch Requested Torque. |
| Number of Application Software Part Numbers | — | Varies | The scan tool displays the Number of Application Software Part Numbers. |
| Number of Boot Software Part Numbers | — | Varies | The scan tool displays the Number of Boot Software Part Numbers. |
| Number of Calibration Part Numbers | — | Varies | The scan tool displays the Number of Calibration Part Numbers. |
| Power Mode | | | |
| Propulsion System Status | Active, Inactive | Active | The scan tool displays the Propulsion System Status. |
| Rear Axle Motor Temperature | °C (°F) | Varies | The scan tool displays the Rear Axle Motor Temperature. |
| Rear Differential Clutch Brake Actuator Command | Engaged/ Disengaged | Engaged | The scan tool displays the Rear Differential Clutch Brake Actuator Command. |
| Rear Differential Clutch Brake Actuator Status | Disengaged, Engaged, Fault | Disengaged | The scan tool displays the Rear Differential Clutch Brake Actuator Status. |
| Rear Differential Clutch Learn Status | Routine Inactive in this Ignition Cycle, Routine Active, Routine Passed, Routine Failed Error Occurred, Routine Failed Temperature out of Range, Routine Failed Vehicle Speed to High, Invalid Input Value, Routine Failed other Constraints, Routine Already Active, Routine Stopped | Routine Inactive in this Ignition Cycle | The scan tool displays the Rear Differential Clutch Learn Status. |
| Rear Differential Clutch Motor Current | Ampere | Varies | The scan tool displays the Desired Rear Differential Clutch Motor Current. |
| Rear Differential Clutch Motor Current | Ampere | Varies | The scan tool displays the Actual Rear Differential Clutch Motor Current. |
| Rear Differential Clutch Motor Current Command | Ampere | Varies | The scan tool displays the Rear Differential Clutch Motor Current Command. |
| Rear Differential Clutch Motor Position | Degree | Varies | The scan tool displays the Rear Differential Clutch Motor Position. |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Rear Differential Clutch Motor Position Command | Degree | Varies | The scan tool displays the Rear Differential Clutch Motor Position Command. |
| Rear Differential Clutch Status | Normal, Temporarily Disabled, Temporarily Limited, Permanently Failed | Temporarily Limited | The scan tool displays Normal/Temporarily Disabled/ Temporarily Limited/Permanently Failed. |
| Rear Differential Clutch Temperature | °C (°F) | Varies | The scan tool displays the Rear Differential Clutch Temperature. |
| Rear Differential Functional Test Status | Routine Inactive in this Ignition Cycle, Routine Active, Routine Passed, Routine Failed Error Occurred, Routine Failed Temperature out of Range, Routine Failed Vehicle Speed to High, Invalid Input Value, Routine Failed other Constraints, Routine Already Active, Routine Stopped | Varies | The scan tool displays the Rear Differential Functional Test Status. |
| Rear Differential Oil Temperature | °C (°F) | Varies | The scan tool displays the Rear Differential Oil Temperature. |
| Rear Differential Successful Clutch Learns | — | Varies | The scan tool displays the Rear Differential Successful Clutch Learns. |
| Rear Differential Thermal Capacity Used | % | Temporarily Limited | The scan tool displays Rear Differential Thermal Capacity Used. |
| Rear Drive Clutch Estimated Torque | Nm | Varies | The scan tool displays the Rear Drive Clutch Estimated Torque. |
| Rear Drive Clutch Oil Temperature | °C (°F) | Varies | The scan tool displays the Rear Drive Clutch Oil Temperature. |
| Rear Drive Clutch Torque Command | Nm | Varies | The scan tool displays the Rear Drive Clutch Torque Command. |
| Right Rear Wheel Speed | RPS | Varies | The scan tool displays 0-16383 rev/s. |
| Vehicle Identification Number (VIN) | — | Varies | The scan tool displays the Vehicle Identification Number. |

## Rear Differential Clutch Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Rear Differential Clutch Learn Command | This function will begin the Rear Differential Clutch Learn routine. |
| Rear Differential Functional Test Command | This function will begin the Rear Differential Functional Test routine. |
| Rear Differential Clutch Motor Current Command | This function allows the technician to control motor using current when requested. |

## K182 Parking Assist Control Module: Scan Tool Information

**Note:** Due to software and hardware variations, not all information may be applicable.

### Parking Assist Control Module Scan Tool Data Parameters – Identification Information

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Vehicle Identification Number (VIN) | — | Varies | The scan tool displays the Vehicle Identification Number |
| Diagnostic Data Identifier | — | Varies | The scan tool displays the Diagnostic Data Identifier |
| XML Configuration Compatibility Identifier | — | Varies | The scan tool displays the XML Configuration Compatibility Identifier |
| XML Data File Part Number | — | Varies | The scan tool displays the XML Data File Part Number |
| XML Data File Alpha Code | — | Varies | The scan tool displays the XML Data File Alpha Code |
| Module Diagnostic Address | — | Varies | The scan tool displays the Module Diagnostic Address |
| Manufacturer's Traceability Number | — | Varies | The scan tool displays the Manufacturer's Traceability Number |
| Software Part Number | — | Varies | The scan tool displays the Software Part Number |
| Calibration Part Number 2 | — | Varies | The scan tool displays the Calibration Part Number 2 |
| End Model Part Number | — | Varies | The scan tool displays the End Model Part Number |
| Base Model Part Number | — | Varies | The scan tool displays the Base Model Part Number |
| Software Module 1 Identifier Alpha Code | — | Varies | The scan tool displays the Software Module 1 Identifier Alpha Code |
| End Model Part Number Alpha Code | — | Varies | The scan tool displays the End Model Part Number Alpha Code |
| Base Model Part Number Alpha Code | — | Varies | The scan tool displays the Base Model Part Number Alpha Code |
| GMLAN Identification Data - Bus 1 Type | — | Varies | The scan tool displays the GMLAN Identification Data - Bus 1 Type |
| GMLAN Identification Data - Data Dictionary 1 Version | — | Varies | The scan tool displays the GMLAN Identification Data - Data Dictionary 1 Version |
| GMLAN Identification Data - GMLAN Kernel 1 Version | — | Varies | The scan tool displays the GMLAN Identification Data - GMLAN Kernel 1 Version |
| Date Programmed | — | Varies | The scan tool displays the date the module was programmed |

### Parking Assist Control Module Scan Tool Data Parameters – Park Assist System Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Power Mode | — | Run | The scan tool displays Off, Accessory, Run or Crank. This is the state of the ignition switch. |
| Battery Voltage | — | 11–14 V | The scan tool displays V. This is the current battery voltage. |
| Parking Assist System Status | — | Enable | The scan tool displays Disable, Enable, Inhibited or Failed. This is the state of the parking assist system. |
| Parking Assist Chime | — | Varies | The scan tool displays On or Off. On is displayed if there is an object within the measuring range of the object sensors. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Parking Assist Sensors | — | ON | The scan tool displays On or Off. |
| Calculated Transmission Range | Transmission in reverse | Park | The scan tool displays Park, Reverse, Neutral, Drive or Unknown depending on the state of the commanded gear. |
| Parking Assist Switch | — | Active/Inactive | The scan tool displays Active or Inactive depending on the state of the parking assist switch. |
| Advanced Parking Assist Switch | — | Active/Inactive | The scan tool displays Active or Inactive depending on the state of the advanced parking assist switch. |
| Parking Assist Sensors Reference Voltage | — | 7.3–12.1 V | The scan tool displays V. This is the amount of voltage being sent to the object sensors. |
| Parking Assist Switch LED | — | Varies | The scan tool displays On or Off depending on the state of the parking assist switch LED. |
| Right Side Object Detection Indicator | — | Varies | The scan tool displays a blank, On or Off depending on the state of the right side object detection indicator command status. |
| Left Side Object Detection Indicator | — | Varies | The scan tool displays a blank, On or Off depending on the state of the left side object detection indicator command status. |
| Advanced Parking Assist Status | — | Standby | The scan tool displays Standby, Active, or Inactive depending on the state of the advanced parking assist. |

### Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Sensor Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Parking Assist Sensors | — | ON | The scan tool displays On or Off. |
| Parking Assist Sensors Reference Voltage | — | 7.3–12.1 V | The scan tool displays V. This is the voltage being sent to the object sensors. |
| Left Front Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Front Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Front Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Front Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Front Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Front Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Rear Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Left Rear Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Left Rear Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Rear Advanced Parking Assist Side Object Sensor | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Rear Outer Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |
| Right Rear Inner Object Sensor Distance to Object | — | 32767 mm | The scan tool displays mm. This is the distance between the parking assist sensor and the nearest object. |

## Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Disable History 1–4 Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Parking Assist Disable History 1 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 2 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 3 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 4 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |

## Parking Assist Control Module Scan Tool Data Parameters – Parking Assist Disable History 5–7 Data

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| **Operating Conditions:** Ignition ON/Engine OFF/Parking Assist ON | | | |
| Parking Assist Disable History 5 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |

| Parameter | System State | Expected Value | Description |
|---|---|---|---|
| Parking Assist Disable History 6 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |
| Parking Assist Disable History 7 | — | Varies | The scan tool displays None, Manual Disable, Park Brake Applied, Trailer or Other Attached Object, Excessive Speed in Reverse, No or Invalid Sensor Signals, Sensor Disturbance, Sensors Dirty, Sound Signal Return Time Not Plausible. This is the state of the park assist disable history. |

### Parking Assist Control Module Scan Tool Output Controls

| Output Control | Description |
|---|---|
| Park Assist Switch LED | The parking assist control module illuminates the advanced park assist LED of the when commanded from the scan tool. |
| Clear Disable History Data | The parking assist control module clears the Parking Assist Disable History data when commanded from the scan tool. |
| Clear Side Object Detection Disable History | The parking assist control module clears the Side Object Detection Disable History data when commanded from the scan tool. |
| CAN Bus Configuration Learn | The parking assist control module learns the CAN Bus configuration when commanded from the scan tool. |
| Parking Assist Sensor Learn | The parking assist control module learns the Parking Assist Sensor configuration when commanded from the scan tool. |

## K183 UHF Short Range Low Energy Remote Control Access Transceiver: Scan Tool Information

### K183 UHF Short Range Low Energy Remote Control Access Transceiver Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON/Vehicle in SERVICE MODE | | |
| Mobile Device Presence in Short Range Zone | Yes/No | Detecting the presence of the mobile device within a short range zone around the vehicle where the mobile device would be be able to interact with your vehicle to activate welcome lights of the vehicle with HIGH probability of success. |
| Mobile Device Left Entry Allowed | Yes/No | Indicates if you can enter the vehicle from any door located on the left side by using your mobile device. |
| Mobile Device Right Entry Allowed | Yes/No | Indicates if you can enter the vehicle from any door located on the right side by using your mobile device. |
| Mobile Device Front Entry Allowed | Yes/No | Indicates if you have an access to frunk of the vehicle by using your mobile device. |
| Mobile Device Rear Entry Allowed | Yes/No | Indicates if you have an access to rear closure of the vehicle by using your mobile device. |
| Mobile Device Left Side Count | Counts | Indicates the numbers of mobile devices detected in the LEFT side of the vehicle. |
| Mobile Device Right Side Count | Counts | Indicates the numbers of mobile devices detected in the RIGHT side of the vehicle. |
| Mobile Device Interior Count | Counts | Indicates the numbers of mobile devices detected INSIDE the vehicle. |
| Mobile Device Front Compartment Count | Counts | Indicates the numbers of mobile devices detected inside frunk of the vehicle. |
| Mobile Device Rear Compartment Count | Counts | Indicates the numbers of mobile devices detected inside rear closure/ trunk of the vehicle. |

| Parameter | Expected Value | Definition |
|---|---|---|
| Mobile Device Rear Side Count | Counts | Indicates the numbers of mobile devices detected in the REAR side of the vehicle. |
| Mobile Device Front Side Count | Counts | Indicates the numbers of mobile devices detected in the FRONT side of the vehicle. |
| Mobile Device Short Range Zone Count | Counts | Indicates the numbers of mobile devices detected in welcome zone of the vehicle. Welcome zone is approximately 10ft (3m) embrace area around the vehicle where the mobile device can interact with the vehicle to activate welcome lights of the vehicle with HIGH density of detection. |
| Mobile Device Connected Count | Counts | Indicates number of mobile devices connected to the vehicle. |
| Mobile Device Status | [0] Unpaired - Learn Mode Inactive<br>[1] Pairing - Learning<br>[2] Paired - Learned<br>[3] Blocked - Learn Failed or Not Learned | Indicates the status of the vehicle virtual key state. |
| Mobile Device Interior Count with Starting Access | Counts | Indicates the number of mobile devices inside the vehicle with access to start the vehicle. |
| Mobile Device 1 Bluetooth Ranging Session | Active/Inactive | This parameter indicates if the system is currently searching for the mobile device using bluetooth. |
| Mobile Device 2 Bluetooth Ranging Session | Active/Inactive | This parameter indicates if the system is currently searching for the mobile device using bluetooth. |
| Mobile Device 3 Bluetooth Ranging Session | Active/Inactive | This parameter indicates if the system is currently searching for the mobile device using bluetooth. |
| Mobile Device 4 Bluetooth Ranging Session | Active/Inactive | This parameter indicates if the system is currently searching for the mobile device using bluetooth. |
| Mobile Device 5 Bluetooth Ranging Session | Active/Inactive | This parameter indicates if the system is currently searching for the mobile device using bluetooth. |
| Mobile Device 6 Bluetooth Ranging Session | Active/Inactive | This parameter indicates if the system is currently searching for the mobile device using bluetooth. |
| Mobile Device Interior Count with Entry Access | Counts | Indicates the number of mobile devices key fobs detected inside the vehicle you can use to enter the vehicle. |
| Total Valid Stored Mobile Devices | Counts | Indicates the total number of stored mobile devices up to 32 mobile devices. |

## K194 Rear Gate Module: Scan Tool Information

### Rear Gate Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| **Operating Conditions:** Vehicle Power Mode » Run/Service Mode. | | | |
| Rear Gate Latch Neutral Switch Stuck | — | No | This displays Yes if the rear gate neutral switch is active while other liftgate latches are inactive |
| Rear Gate Latch Primary Switch Stuck | — | No | This displays Yes if the rear gate primary switch is active while other liftgate latches are inactive |
| Rear Gate Latch Unlatch Switch Stuck | — | No | This displays Yes if the rear gate unlatch switch is active while other liftgate latches are inactive |
| Rear Gate Latch Neutral Switch Signal | — | Valid | This displays Invalid if the rear gate neutral switch is inactive while other liftgate latches are active |
| Rear Gate Latch Primary Switch Signal | — | Valid | This displays Invalid if the rear gate primary switch is inactive while other liftgate latches are active |
| Rear Gate Latch Unlatch Switch Signal | — | Valid | This displays Invalid if the rear gate unlatch switch is inactive while other liftgate latches are active |

| Parameter | System State | Expected Value | Definition |
|---|---|---|---|
| Rear Gate Ajar | — | Closed/Ajar | This will display the state of the liftgate |
| Rear Gate Latch Unlatch Switch | — | Inactive | The scan tool displays Inactive or Active. This is the state of the latch unlatch switch depending upon if the liftgate is in the open position or closed position |
| Rear Gate Latch Primary Switch | — | Inactive | The scan tool displays Inactive or Active. This is the state of the latch primary switch depending upon if the liftgate is in the open position or closed position |
| Rear Gate Latch Neutral Switch | — | Inactive | The scan tool displays Inactive and will briefly display Activate as the liftgate latch releases or cinches. |
| Rear Gate Anti-pinch Sensor Voltage Raw Value | — | 3.7v | The scan tool displays the actual voltage on the liftgate object sensors circuit as measured by the rear gate module. |
| Rear Gate Pinch Sensor Active | — | Inactive | This parameter will change from Inactive to Active when the rear gate pinch sensor is pressed |
| Rear Gate Travel | — | Less than 5%–greater than 80% | This parameter will change from less than 5% when the liftgate is in the close position to greater than 80% when the liftgate is in the open position |
| Rear Gate Max Height Learned | — | Learned | This displays Yes if the maximum height has been programmed |

## K299R Audio/Video Interface Rear Module: Scan Tool Information

### Audio/Video Interface Rear Module Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Vehicle Power Mode | Enumeration | 0=Off, 1=Accessory, 2=Run, 3=Start/Request, 4=Propulsion |
| Vehicle Power Mode Invalidity | True or False | The scan tool displays an invalid power mode. |
| Diagnostic Data Identifier | Unsigned Numeric | Identifies a supplier and system specific data stream used by diagnostic testers to interpret a diagnostic data stream. |
| Manufacture’s Traceability Characters | Varies | The scan tool displays the Manufacture’s Traceability Characters. |
| ECU ID | Varies | The scan tool displays the ECU ID. |
| Application Software Identification Data Identifier | Varies | The scan tool displays the Application Software Identification Data Identifier. |
| Vehicle Identification Number | Varies | The scan tool displays the vehicle identification number. |
| Repair Shop Code or Tester Serial Number | Varies | The scan tool displays the Repair Shop Code or Tester Serial Number. |
| Programming Date | Varies | The scan tool displays the date the module was programmed. |
| Manufacturers Enable Counter | Varies | The scan tool displays the Manufacturers Enable Counter. |
| ECU Diagnostic Address | Varies | The scan tool displays the ECU Diagnostic Address. |
| GM End Model Part Number | Varies | The scan tool displays the GM End Model Part Number. |
| GM Base Model Part Number | Varies | The scan tool displays the GM Base Model Part Number. |
| GM Base Model Part Number Alpha Code | Varies | The scan tool displays the GM Base Model Part Number Alpha Code. |
| GM End Model Part Number Alpha Code | Varies | The scan tool displays the GM End Model Part Number Alpha Code. |

## T3 Audio Amplifier: Scan Tool Information

### Amplifier Scan Tool Data Parameters

| Parameter | Expected Value | Definition |
|---|---|---|
| **Operating Conditions:** Ignition ON | | |
| Power Mode | Off<br>ACC<br>Crank<br>Run | The scan tool displays Off, Accessory, Run or Crank Request. This is the vehicle power mode status as received via serial data. |
| Active Noise Cancellation | On<br>Off | The scan tool displays On or Off. This indicates if the Active Noise Cancellation feature is available and capable of operating. |
| Engine Sound Enhancement | On<br>Off | The scan tool displays On or Off. This is the status of the engine sound enhancement function. |
| Battery Voltage | Varies | The scan tool displays volts. This is the voltage at the input to the amplifier. |
| Vehicle Speed | 0 km/h | The scan tool displays the vehicle speed received by the amplifier in km/h or mph. |
| Engine Speed | 0 RPM | The scan tool displays the current engine speed received by the amplifier in RPM . |
| Calculated System Temperature | Varies | The scan tool displays the calculated temperature of the amplifier in °C or °F. |
| Microphone Status | Normal | The scan tool displays Normal, Clipped, or Malfunction. |
| Microphone 1 Input Level | Varies | The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 1, with higher numbers indicating louder sounds. |
| Microphone 2 Input Level | Varies | The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 2, with higher numbers indicating louder sounds. |
| Microphone 3 Input Level | Varies | The scan tool displays counts from 0 to 65,535. This is the sound level currently being received by the microphone 3, with higher numbers indicating louder sounds. |
| Door Status | Varies | The scan tool displays All Closed or One or More Open. This is the current status of the vehicle access door latches as received via serial data. |

## T22 Wireless Accessory Charging Module: Scan Tool Information

The T22 Wireless Accessory Charging Module scan tool data parameters list contains all automatic level control related parameters that are available on the scan tool. The list is arranged in alphabetical order. A given parameter may appear in any one of the data lists.

### Wireless Accessory Charging Module Scan Tool Data Parameters

| Parameter | System State | Expected Value | Description (Range) |
|---|---|---|---|
| **Operating Conditions:** Ignition ON | | | |
| Alignment Status | — | Varies | The scan tool displays the current condition of Radar Alignment. |
| Charging Current Level | — | Varies | The scan tool displays the state or energy level of charging device being energized by inductive charging coil located under the cup holder (None, Low, Medium, High). |
| Charging Current Value | — | Varies | The scan tool displays the current in mA being energized by inductive charging coil located under cup holder (0–1000mA). |

| Parameter | System State | Expected Value | Description (Range) |
|---|---|---|---|
| Wireless Charging Disable History - 1 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 2 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 3 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 4 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 5 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 6 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 7 | — | Varies | Indicates why the wireless charging system was disabled. |
| Wireless Charging Disable History - 8 | — | Varies | Indicates why the wireless charging system was disabled. |

### K111 Fuel Pump Power Control Module Scan Tool Information

Refer to: *K20 Engine Control Module: Scan Tool Information 4-123* *K20 Engine Control Module: Scan Tool Information 4-156*.

## Diagnostic Information and Procedures

### Strategy Based Diagnosis

The goal of Strategy Based Diagnosis is to provide guidance when you create a plan of action for each specific diagnostic situation. Following a similar plan for each diagnostic situation, you will achieve maximum efficiency when you diagnose and repair vehicles. Although each of the Strategy Based Diagnosis steps are numbered, you are not required to complete every step in order to successfully diagnose a customer concern. The first step of your diagnostic process should always be Understand and Verify the Customer's Concern. The final step of your diagnostic process should be to Repair and verify the Fix. Refer to the steps listed below for the correct Strategy Based Diagnosis.

**Note:** For additional information on the following steps refer to the corresponding numbered paragraphs listed below.

1. Understand and verify the customers concern.
2. Verify the vehicle is not operating as designed:

⇒ **If the vehicle is operating as designed review the suggestions listed below:**

- Check Identical Vehicle
- Customer Misunderstanding of System – Explain operation to customer or refer to owners or service manual
- Customer dissatisfaction – Submit a Field Product Report

⇓ **If the vehicle is not operating as designed**

3. Perform preliminary checks – Visual inspections and operational

⇒ **If the customers concern is found, refer to step 5**

⇓ **If the customers concern is not found**

4. Perform the Diagnostic System Check – Vehicle, determine the diagnostic service category to perform.

⇒ **If the customers concern is found, refer to step 5**

⇓ **If the customers concern is not found**

5. Check for related Bulletins, Recalls and Preliminary Information.

⇒ **If the customers concern is found, refer to step 7**

⇓ **If the customers concern is not found**

**Note:** If a diagnostic procedure indicates to replace a programmable control module, the control module must be reprogrammed with the latest available software and retested before replacement:

- If updated control module software is available, reprogram the control module and re-test to verify if updated software has corrected the concern. If the updated software has corrected the concern, no further action is required; Do not replace the control module. If the concern persists after programming the control module with the latest software, continue following the diagnostic instructions and replace the control module.

- If updated control module software is not available, continue following the diagnostic instructions and replace the control module if instructed.
- If the scan tool is unable to communicate with the suspected control module, attempt to reestablish communication by removing and reconnecting power to the control module. This may be performed by removing the fuse or fuses powering the control module or by disconnecting the electrical connector(s) at the control module. If communication with the control module is reestablished after removing and reconnecting power, reprogram the control module with the latest software (if available) and re-examine the concern.

6. Follow the diagnostic path listed below:
   - 6.1. Current DTC – Follow DTC Diagnostics
   - 6.2. Symptom no DTC – Follow Symptom Diagnostics
   - 6.3. No published diagnostic – Analyze and develop diagnostics or call Technical Assistance
   - 6.4. Intermittent/History DTC – See diagnostic detail below
7. Isolate the root cause then repair and verify the fix.
8. Re-examine the concern.

⇒ **If the vehicle is not repaired, refer to step 1**

⇓ **If the vehicle is repaired**

9. All OK.

**Additional Information**

1. Understand and Verify the Customer Concern: The first part of this step is to obtain as much information as possible from the customer. Are there aftermarket accessories on the vehicle? When does the condition occur? Where does the condition occur? How long does the condition last? How often does the condition occur? In order to verify the concern, the technician should be familiar with the normal operation of the system and refer to the owner or service manual for any information needed.
2. Vehicle Operating as Designed: This condition exists when the vehicle is found to operate normally. The condition described by the customer may be normal. Compare with another like vehicle that is operating normally under the same conditions described by the customer. Explain your findings and the operation of the system to the customer. If the customer is dissatisfied submit a Field Product Report.
3. Preliminary Checks: Conduct a thorough visual inspection. Review the service history. Detect unusual sounds or odors. Gather diagnostic trouble code (DTC) information in order to achieve an effective repair.
4. Perform Published Diagnostic System Check-Vehicle: The *Diagnostic System Check - Vehicle 4-281* verifies the proper operation of the system. This will lead the technician in an organized approach to diagnostics and identify what category of diagnostic to perform.
5. Check for related Bulletins, Recalls and Preliminary Information (PI).

**Note:** When diagnosing DTCs and symptoms that involve an control module, updated software may be available. Before replacing an control module, first determine if any software updates are available. If new software is available, reprogram the control module and reevaluate the concern. In many instances, reprogramming the control module with the latest software may correct a software-related fault and resolve the concern without replacement of the control module.

6. Diagnostic categories:
   - 6.1. Current DTC: Follow the designated DTC diagnostic in order to make an effective repair. Refer to [Link target (target-id 72795-) not found] .
   - 6.2. Symptom - No DTC: Select the appropriate symptom diagnostic. Follow the diagnostic steps or suggestions in order to complete the repair. Refer to [Link target (target-id 72796-) not found] .
   - 6.3. No Published Diagnostics: Analyze the Concern. Develop a plan for the diagnostics. The service manual schematics will help you to see system power, ground, input, and output circuits. You can also identify splices and other areas where multiple circuits are tied together. Look at component locations to see if components, connectors or harnesses may be exposed to extreme temperature, moisture, or corrosives (road salt, battery acid, oil or other fluids). Utilize the wiring diagrams, system description and operation, and system circuit description.
   - 6.4. Intermittent/History DTC: An intermittent condition is one that does not occur continuously, may be difficult to duplicate, and will only occur when certain conditions are met. Generally, an intermittent is caused by faulty electrical connections and wiring, malfunctioning components, electromagnetic/radio frequency interference, driving conditions, or aftermarket equipment. The following

approaches/tools may prove to be beneficial in locating and repairing an intermittent condition or history DTC.

- Combining technicians knowledge with the available service information.
- Evaluate the symptoms and conditions described by the customer.

  North America – The GM Customer Concern Verification Sheets have been designed to improve communications between the service customer and the technician. The more clearly the technician understands the concern and its symptoms, the more likely the concern will be fixed right the first time. The blank CCVS can be found in GM Global Connect under Service, Service Forms.
- Follow the suggestions on [Link target (target-id 62112-) not found] .
- Use a tool with data capturing capabilities like scan tool, digital multi-meter, or (if available) a vehicle data recorder.

7. Isolate the Root Cause then Repair and Verify Fix: After isolating the root cause, make the repairs and validate for the correct operation by performing the *Diagnostic Repair Verification 4-295*. Verifying that the DTC or symptom has been corrected may involve road testing the vehicle.
8. Re-examine the Concern: If a technician cannot successfully find or isolate the concern, a re-evaluation is necessary. Re-verify the concern. The concern could be an intermittent or normal condition.

## Diagnostic Procedure Instructions

The following is an instructional overview of all categories which may be included in a diagnostic procedure.

## Diagnostic Instructions

- A link to the *Diagnostic System Check - Vehicle 4-281* is provided here. This procedure should be performed prior to performing other diagnostic procedures, as this prevents misdiagnosis where there are integrated system dependencies.
- A link to the *Strategy Based Diagnosis 4-271* is provided here. This provides an overview on how a technician should diagnose a vehicle.
- A link to the *Diagnostic Procedure Instructions 4-273* is provided here. This information is an instructional overview of all categories which may be included in a diagnostic procedure.

## DTC Descriptor

Lists all DTCs and descriptors that are diagnosed within the procedure.

If the DTC supports symptom bytes they will either be listed with the DTC or there will be a link to the symptom byte list.

## Diagnostic Fault Information

The Diagnostic Fault Information table identifies each circuit that makes up an electrical subsystem and the associated circuit faults. DTCs and symptoms are listed in the table for all circuit fault modes. This information can be used to diagnose an electrical fault, or as a quick visual aid showing how the different DTCs and symptoms apply for the subsystem being diagnosed.

All DTCs and symptoms shown in this table are not necessarily diagnosed during this procedure.

An example table from an engine coolant temperature (ECT) procedure:

| Circuit | Short to Ground | Open/High Resistance | Short to Voltage | Signal Performance |
|---|---|---|---|---|
| Signal | P0117 | P0118, P0119 | P0118*, P0119 | P0128, P111E |
| Low Reference | — | P0118, P0119 | — | P0128 |
| * Internal control module or component damage may occur if the circuit shorts to B+. | | | | |

## Typical Scan Tool Data

The Typical Scan Tool Data table identifies a scan tool data parameter and its value in reference to potential circuit faults.

An example table from an ECT procedure:

### ECT Sensor

| Circuit | Short to Ground | Open | Short to Voltage |
|---|---|---|---|
| **Operating Conditions:** Engine = Idling— At normal operating temperature.<br>**Parameter Normal Range:** 88 to 105°C (190 to 221°F) | | | |
| Signal | 140°C (248°F) | −40°C (−40°F) | −40°C (−40°F) |
| Low Reference | — | −40°C (−40°F) | — |

## Circuit/System Description

Circuit/System Description identifies circuits, components, and describes how the circuit/system normally functions.

## Conditions for Running the DTC

Conditions for Running the DTC, identifies what conditions must be present to allow the diagnostic to run.

## Conditions for Setting the DTC

Conditions for Setting the DTC, identifies the conditions that must be present in order to fail the diagnostic and when to set the DTC.

## Actions Taken When the DTC Sets

Actions Taken When the DTC sets, identifies the default actions taken when a control module sets a DTC.

## Conditions for Clearing the DTC

Conditions for Clearing the DTC, identifies the conditions that must be met in order to clear the DTC.

## Diagnostic Aids

Diagnostic Aids are suggestions which explain other methods to diagnose the condition. It also provides unique information about the system to assist the technician in finding and repairing a vehicle condition.

## Reference Information

Reference Information includes links providing additional information to be used with the diagnostic procedure.

For example:

- Schematic Reference
- Connector End View Reference
- Component View Reference
- Description and Operation
- Electrical Information Reference
- DTC Type Reference
- Scan Tool Reference
- Special Tools

## Circuit/System Verification

The Circuit/System Verification, when supported, needs to be performed prior to the Circuit/System Testing. It will determine the following conditions:

- If a higher priority concern needs to be addressed first (E.g. other DTCs)
- If other conditions are present (E.g. low fluid level)
- If the condition is current
- If the condition is intermittent
- If the system is all Ok

**Note:** Any diagnostic step that asks if a DTC is “set” refers to a Set, Current, Present, Active DTC status. This does not include any other DTC status. For example History, Not Run, Passed and Failed.

Circuit/System Verification is a non-intrusive procedure outlining how to verify that a system or a portion of a system is functioning correctly. During the verification process, the vehicle is kept intact and tested as a complete system. The verification is used to assist the technician in determining whether a condition is current, intermittent, or not present (All Ok). When a condition is determined to be intermittent a technician can use the [Link target (target-id 62112-) not found] link in Electrical Information Reference for additional testing information.

The technician should be able to identify if the fault is occurring on the input (signal) circuit or on the output (control) circuit when applicable.

**Component Codes**
The component codes are a language independent method of identifying a common component between different areas in the service information. The component codes work regardless on how the actual component name was translated.

The component codes used on the schematics will have the base code with an extension to identify location or quantity. For example the ABS wheel speed sensors are identified on the schematic with a base code (B5) and a location extension (LF, RF, LR, and RR) as seen below:

- B5LF Wheel Speed Sensor - Left Front
- B5RF Wheel Speed Sensor - Right Front
- B5LR Wheel Speed Sensor - Left Rear
- B5LR Wheel Speed Sensor - Left Rear

The diagnostic procedures will use the base code (B5) for a wheel speed sensor but may or may not use the extension identifying location (LF, RF, LR, and RR).

**Example:**
Disconnect the harness connector at the appropriate B5 Wheel Speed Sensor.

Or

Disconnect the appropriate electrical connector: B5 Wheel Speed Sensor

This is done so the diagnostic procedure can be common for all four wheel speed sensors and not have to take into account part location or quantity.

When the diagnostic states “the appropriate” it is up to the technician to identify which component is being diagnosed either by the symptom (Driver’s door lock is inoperative) or the DTC descriptor (DTC C0585 04: Left Rear Door Latch Circuit Open).

### Circuit/System Testing

**Note:** Performing the Circuit/System Verification category first will aid in determining if a vehicle condition currently exists.

Circuit/System Testing is a step by step, positive-flow, testing sequence which allows the technician to perform each test step, in sequence, until a fault is detected. If the result of a numbered test step is NOT achieved, the Right Repair Arrow below the failed test will identify what actions need to take place. If the result of a numbered test step is achieved, the normal flow is to proceed to the next numbered test step, as indicated by the Down Pass Arrow.

Intrusive diagnostics are performed to locate the system fault. System harness connections are disconnected from the component or control module to test individual circuit functions. The component or control module will be used to assist in verifying the circuit function. When a test does not pass, the repair steps (Right Repair Arrow) will indicate what circuit faults to test. For example a short to voltage, short to ground, or open/high resistance.

When testing for individual circuit faults, the technician is expected to perform terminal inspections such as connection surfaces and terminal tension at both the harness and the component or control module. When a condition is determined to be intermittent a technician can use the [Link target (target-id 62112-) not found] or [Link target (target-id 62194-) not found] link in Electrical Information Reference for additional information.

The component and control module will also be diagnosed during the test steps. A retest of a component or control module should always be performed before replacement. For example, reconnect all components and control modules and retest the system to verify the condition still exists before replacing components or control modules.

### Component Testing

Component Testing may offer a static and/or dynamic component tests. These tests can be used to verify if a component is operating correctly to avoid unnecessary replacement.

Testing control modules in this category will not be offered. In most cases, the control module is used to verify the harness circuits in the Circuit/System Testing category and a retest of the control module should always be performed before replacement.

### Repair Instructions

Repair Instructions provides a link to *Diagnostic Repair Verification 4-295*. This link describes how to verify the vehicle is repaired.

All links to repair, replacement, or programming procedures are located here.

### Repair Verification

Repair Verification describes how to verify the vehicle is repaired when additional instructions are needed beyond what is in the Diagnostic Repair Verification.

### Diagnostic System Check Instructions

The following is an overview of instructions for the general information and 14 step System Verification included in the Diagnostic System Check - Vehicle procedure.

### Diagnostic Instructions

A link to *Strategy Based Diagnosis 4-271* is provided as an overview on how a technician should diagnose a vehicle.

A link to the Diagnostic System Check Instructions is provided. This provides an overview of instructions and examples for the general information and 14 step System Verification included in the Diagnostic System Check - Vehicle procedure. The examples in this document are intended to give the technician a general idea of what the test step is referring to. They are not intended to list every possible condition or situation.

Diagnostic Systems Check steps are listed by priority to guide the technician to the appropriate diagnostic procedure to correct the customer concern. There are many ways to determine the priority of diagnosing a vehicle concern. Some faults can cause customer perceived symptoms in areas unrelated to the fault. Using an example from the System Check, after reading DTCs, the technician is asked to verify there are no Electronic Control Unit Internal Performance Faults present. It is important that any internal performance issues are addressed prior to continuing through the System Check. There is no benefit addressing other DTCs that could be set due to an internal fault to a control module. If the fault is present, performing the diagnostic procedure for that fault will likely correct the customer perceived concern and possibly eliminate other DTCs that may be set.

Not all steps of the Diagnostic System Check have to be performed. The Diagnostic System Check tries to prioritize the test steps with the highest priority faults first. The technician is then lead to another document to do the actual diagnosis or repair. The strategy is to repair higher level faults that may be the cause of other system or component level symptoms. Additionally, the Diagnostic System Check can only be used for a single fault at a time. If additional faults are present, the technician must perform the diagnostic system check for each concern until all customer concerns are corrected.

Once a repair has been completed, General Motors diagnostic strategy is to always have the technician verify that the customer concern has been corrected. This is to prevent comebacks and to ensure customer satisfaction with their dealership experience. Therefore a link has been provided to *Diagnostic Repair Verification 4-295* procedure for the technician to verify the customer concern has been corrected.

There are some assumptions made when General Motors prepares service information. They include the following areas which are presumed to function as designed:

- The 12-volt battery is fully charged. General Motors assumes the majority of vehicles brought in for repair will be able to start and be driven into the service stall. If the vehicle has a dead battery, it is slow cranking or for any other reason the technician feels the customer concern may be battery related, a link is provided to [Link target (target-id 37781-) not found] . This procedure will guide the technician through inspecting and verifying the battery functions properly.
- Fuses should not be open. General Motors does not call out in diagnostic procedures to verify a fuse. The technician is expected to find an open fuse when the diagnostic test step states to check for an open circuit condition. Therefore a link has been provided to *Power Distribution Schematics 9-909* and *Electrical Center Identification Views 9-36* for technicians to reference power sources and fuse locations if they feel there may be loss of power due to an open fuse condition.
- Ground circuits are clean, tight, and in the correct location. General Motors assumes that the original ground circuits have not been compromised. The technician is expected to find a poor ground connection when the diagnostic test step states to test the ground circuit for an open/high resistance. Therefore a link has been provided to *Ground Distribution Schematics 9-952* and *Harness Routing Views 9-736* for technicians to reference ground locations and which ground circuits may be related to the customer concern.
- All connectors/terminals fully seated in the area of concern. General Motors assumes that all connections are properly installed. The technician is expected to find an open or poor connection when the diagnostic test step asks to test the circuit for an open/high resistance. Therefore a link has been provided to *Master Electrical Component List 9-988* for technicians to reference which connections may be related to the customer concern.
- There are no aftermarket devices that affect the operation of the system. General Motors can only author diagnostic and repair information for vehicle systems and components that are original equipment or genuine GM Accessories. Aftermarket equipment can negatively affect original equipment operation and lead a technician's diagnosis of a concern in the wrong direction. Therefore a link has been provided to [Link target (target-id 310488-) not found] that guides a technician through the possible causes of vehicle problems related to aftermarket accessories.
- The scan tool powers up. General Motors assumes that power is available at the Data Link Connector and the scan tool will power on. Therefore a link has been provided to [Link target (target-id 148078-) not found] if the technician finds that the scan tool does not power on.

## Updating Control Module Software

Control module software is an integral part of the operation and function of the control module. More than just the physical component, numerous corrections and enhancements can be changed in the software that will resolve many different faults. Service Information generally uses the term “software” as an indicator of a portion of the control module soft part that can be changed or updated; More specifically, this may be a boot loader, firmware, software, calibration, or other soft part.

As an overall strategy, reprogramming a control module with the most up-to-date software available is the correct diagnostic operation before replacing the control module. If a diagnostic procedure instructs to replace a control module, first determine if updated software is available. If it is, reprogram the control module with the latest software and retest the vehicle to determine if the fault is still present. Simply updating the software in a control module may resolve the concern without the cost or labor of replacing the control module. If programming the control module with the latest software corrects the concern, take no further action. If new software does not resolve the concern or if the control module already has the latest and most up-to-date software, continue with the corrective action identified in the diagnostic procedure.

## Diagnostic System Check

1. VERIFY CUSTOMER CONCERN — This step is to obtain as much information as possible from the customer. Are there aftermarket accessories on the vehicle? When does the condition occur? Where does the condition occur? How long does the condition last? How often does the condition occur? Review the service history of the vehicle for previous repairs that could help diagnose the current concern.

   Now that the technician understands the customer concern, they should validate the concern on the vehicle. In order to verify the concern, the technician should be familiar with the normal operation of the system and refer to the owner or service manual for any information needed. Inspect the visible system components for obvious damage or conditions that could cause the concern. Conduct a thorough visual inspection. Detect unusual sounds or odors.

   The condition described by the customer may be normal. If the technician finds the vehicle to operate normally, compare with another like vehicle that is operating normally, under the same conditions described by the customer. If this is the case, explain your findings and the operation of the system to the customer. If the customer is dissatisfied, submit a Field Product Report.

2. BULLETIN SEARCH — By searching for related bulletins, recall/field actions and preliminary information documents, a procedure for a known field issue may resolve the customer concern with little or no diagnosis necessary saving the technician diagnostic time.

3. MECHANICAL CONCERNS — This step is designed to take the technician directly to a list of symptom diagnostic procedures. The technician is asked to verify the symptoms exhibited by the system are mechanical in nature and not related to an electrical system, see some examples below. If the technician feels the concern could be related to an electrical system, they should continue through the Diagnostic System Check to verify the electrical functionality of vehicle. If the technician feels the concern is exclusively related to a mechanical system, a link to [Link target (target-id 72796-) not found] is provided to select the appropriate symptom diagnostic procedure for the customer concern.

   Examples:

   - Brake noise or diagnosing irregular pad wear
   - Water leak diagnosis
   - Engine or transmission fluid leak diagnosis
   - Manual window or door lock diagnosis
   - Vehicle vibration diagnosis
   - Exhaust noise or leak diagnosis

4. VEHICLE POWER UP VERIFICATION — The technician is asked in this step to verify the vehicle powers up. The technician should look for clues that multiple vehicle systems are receiving vehicle power mode messages, such as the cluster waking up, the radio powers on, the HVAC blower is operational, windshield wipers turn on, etc, with the ignition On. This would be a rare condition as both the power mode master and back-up power mode master would have to be inoperable, however, if the vehicle does not power up, a link to [Link target (target-id 148321-) not found] is provided.

5. CONTROL MODULE COMMUNICATION and DTC CHECK — The technician is asked in this step to record the following three pieces of data on the Repair Order; any control module that the scan tool determined is not communicating, any DTC and symptom byte set current or history, and the control module that has set the DTC.

   This is considered a setup step for the rest of the Diagnostic System Check. The technician is not expected to do anything other than record the three pieces of data provided by the scan tool on the Repair Order. This provides the information needed to complete the rest of the diagnostic system check.

To complete this step, the technician is asked to utilize the scan tool Vehicle DTC Information function. This function will query every possible control module on the vehicle requesting all DTCs. During the DTC query, the scan tool will try to establish communication with each control module. If the scan tool can communicate with the control module during the DTC request, it will display PRESENT and provide the number of DTCs set in the control module. If the scan tool cannot communicate with a control module, it will only display NOT COMMUNICATING. Since the scan tool cannot determine if a given control module should be present or not, the technician is asked in a future step to verify that the vehicle was not built with control modules listed as NOT COMMUNICATING.

If the scan tool cannot establish communications with ALL of the vehicles control modules, a link to [Link target (target-id 148085-) not found] is provided. A faulty control module or fault with the serial data circuit can cause no communication with all of the control modules on the vehicle. If any control module communicates on the serial data circuit, continue through the Diagnostic System check, as a future step will address any specific non communicating or group of non communicating control modules.

Once the scan tool has completed the routine, the technician should review each control module that has set a DTC and document them on the Repair Order. When reviewing the DTCs, the technician should take notice if any DTCs are powertrain related, and if so, navigate in the scan tool to the Powertrain area and utilize the Capture Info function. This will upload any Freeze Frame/Failure Records stored in the control module to the scan tool in case the data is lost from the control module. As an example, if the technician commands a Clear DTCs function on a powertrain controller, all diagnostic information stored in the controller is erased. This includes Freeze Frame/ Failure Records and Inspection/Maintenance System Status indicators, if required for your region.

6. CONTROL MODULE INTERNAL PERFORMANCE FAULTS — The technician is asked to review the DTCs recorded in step 5 and verify there are no control module internal performance faults set current. This type of fault may be the cause of other symptoms or DTCs displayed by the vehicle. By addressing this fault first, the technician may find the other concerns are resolved. The technician should always follow the diagnostic procedure for these types of faults prior to replacing any control module. If the technician finds a control module has an internal performance fault, a link is provided to [Link target (target-id 72795-) not found] to select the appropriate DTC diagnostic procedure.

   Examples:

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 internal performance fault symptoms are shown below.

- U3000 04 Control Module System Internal Malfunction
- U3000 41 Control Module General Checksum Malfunction
- U3000 49 Control Module Internal Malfunction
- P0606 Control Module Internal Performance
- P0607 Control Module Performance

7. CONTROL MODULE COMMUNICATION VERIFICATION — This step is used to ensure the control modules that are NOT COMMUNICATING were not built on the vehicle. If the technician determines that a control module that is NOT COMMUNICATING should be present, the technician is asked to follow the appropriate diagnostic procedure listed in the [Link target (target-id 148085-) not found] document.
8. COMMUNICATION and POWER MODE FAULTS — This step is asking the technician to look for communication DTCs or DTCs related to control modules powering up based on power mode, communication enable or wake-up circuits. See in the below table some examples of the DTCs the technician should diagnose prior to continuing through the Diagnostic System Check. The technician should review the list of DTCs recorded in step 4 and verify that none of these type of DTCs are present. If so, the technician is referred to the [Link target (target-id 72795-) not found] to select the appropriate DTC diagnostic procedure.

   Examples:

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 communication and power mode faults are shown below.

- U3000 04 Control Module Bus Signal/Message Malfunction
- U0140 Lost Communication with Body Control Module
- U0164 Lost Communication with Heater and Air Conditioning User Interface Control - Front
- U0184 Lost Communication with Radio

- U0402 Invalid Data Received from Transmission Control Module
- U0452 Invalid Data Received from Restraints Control Module
- U001B Gear Shift Control Module Powertrain Sensor Bus Enable
- U300D Ignition Input On/Start
- B1AA3 Run/Crank Relay Coil Control

9. POWER MODE VERIFICATION — This step verifies the Power Mode Master is receiving the proper output state of the ignition switch/push button switch. The technician should use the main power mode input, this being either the ignition key or, on vehicles equipped with Passive Entry Passive Start, the push button switch. The test should not be performed using a key fob, if the MIL is illuminated the powertrain controller may disable this input. The technician is asked to perform the test with the driver door open. This ensures the retained accessory power mode is inactive during this test which could result in different scan tool readings. The technician is only asked to verify the current Power Mode parameter in the power mode data display list. If the parameter does not match the actual ignition switch position, a link is provided to perform the [Link target (target-id 148321-) not found] diagnostic procedure.
10. SERIAL DATA AUTHENTICATION FAULTS — This step verifies that control modules are able to authenticate and verify the legitimacy of certain critical messages on in-vehicle networks. The technician should review the list of DTCs recorded in step 4 and verify that none of these DTCs are present. If so, the technician is referred to the [Link target (target-id 72795-) not found] to select the appropriate DTC diagnostic procedure.

    Examples:

    - U1960 Message Authentication Keys Missing or Incomplete
    - U1961 Control Module Security Hardware Internal Malfunction
    - U1962 Unable to Authenticate Serial Data Message
    - U3034 Message Authentication Keys Missing or Incomplete
    - U3035 Unable to Authenticate Serial Data Message
11. PROACTIVE ALERT IDENTIFIERS— The technician is asked in this step to verify there are no Proactive Alert Identifiers set. These identifiers are displayed on the scan tool and will only appear when the OnStar subscription is active and the customer has opted into the Proactive Alert service.
12. ENGINE CRANK and RUN VERIFICATION — Here the technician is asked to verify that the engine cranks and runs. The technician should use the main power mode input, this being either the ignition key or, on vehicles equipped with Passive Entry Passive Start, the push button switch, to complete this step. The test should not be performed using a key fob, if the MIL is illuminated the powertrain controller may disable this input. The technician should know at this point whether the engine cranks and runs without having to actually performing this test step. One of the follow has probably already occurred and this step can be skipped: The technician drove the vehicle into the stall or verified when checking the Crank and Run parameter in step 8. If the technician has not already somehow verified the engine cranks in previous steps, the technician should perform this test step. Regardless of how this step was performed, if the engine does not crank, a link is provided to *Engine Does Not Crank 4-295* or if the engine cranks but does not run, a link is provided to [Link target (target-id 179979-) not found] for the technician to choose the correct diagnostic procedure for the actual engine application being used.
13. REMAINING DTC REVIEW — Here the technician is asked to review any remaining DTCs that were not addressed in previous steps. The technician is asked first to verify there are no control module supply voltage, system voltage or 5 V circuit DTCs present. Control modules, systems or components with insufficient or zero voltage can cause one or multiple symptoms to exist on the vehicle. Control module voltage issues could also be the cause of failures during a programming event. The technician should correct voltage issues prior to addressing any programming or configuration DTCs. The technician should then check for any ECU programming, setup or configuration DTCs. By programming software or configuring a control module, the technician could correct the customer concern unobtrusively. The remaining DTCs, which are usually specific system or component faults, are diagnosed last. They can include ECU input and output circuit DTCs or individual circuit faults that usually cause single symptoms or failure modes on the vehicle and can be fixed following the proper DTC diagnostic procedure. In general, the technician should think about what DTCs or faults could be caused by another DTC or fault. A failed sensor may set a component DTC and then the system may set a DTC indicating the system cannot operate properly. By correcting the sensor fault, the system may now operate properly and the system level DTC will transition to history. Refer to the examples within each category below

to understand the differences between these DTCs. If DTCs of these type are current, the technician is referred to [Link target (target-id 72795-) not found] to choose the correct DTC diagnostic procedure.

13.1. Voltage DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 voltage faults are shown below.

- U3000 16 Control Module Circuit Low Voltage
- U3000 17 Control Module Circuit High Voltage
- B19F4 Vehicle 12V Charging System
- P0560 System Voltage
- P0651 Sensor Reference 2 Circuit
- U3006 Control Module Power 1 Circuit

13.2. Programming, Setup, Configuration or Software Performance DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 programming, setup, configuration, or software faults are shown below.

- U3000 51 Control Module Not Programmed
- U3000 54 Control Module Missing Calibration
- U3000 55 Control Module Not Configured
- C05D4 Brake Master Cylinder Piston Position Sensor Calibration Not Learned
- P0602 Control Module Not Programmed
- P0630 VIN Not Programmed or Mismatched - Powertrain Control Module (PCM)

13.3. Component related DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 component faults are shown below.

- U3000 4A Control Module Incorrect Component Installed
- B0013 Co-Driver Knee Module High Control
- B15A7 Instrument Panel Accent Lighting Control
- C0502 Left Front Wheel Speed Sensor Circuit Low Input
- P0535 Air Conditioning Evaporator Temperature Sensor Circuit
- P0131 Heated Oxygen Sensor Circuit Low
- P0712 Transmission Fluid Temperature Sensor Circuit Low

13.4. System related DTCs

**Note:** DTC U3000 is used for both high level control module faults and lower level faults. The fault level is determined by the symptom byte set with the DTC. Examples of some DTC U3000 system related faults are shown below.

- U3000 9A Control Module Incorrect Component or System Operating Conditions Exceeded
- B1A04 Front View Camera - Windshield
- C003F Wheel Speed Sensors Direction Correlation
- C2A21 Park Brake Actuator Position Unknown
- P0101 Mass Airflow Sensor Performance
- P175E Transmission Control System - Shift Limiting Active

13.5. Any other remaining DTCs — The technician should diagnose and correct any other DTCs that are left that were not from the categories above.

14. EMISSION RELATED INSPECTION/MAINTENANCE TESTING CONCERNS — Several regions require that a vehicle pass on-board diagnostic system tests and the inspection/maintenance emission tests in order to renew license plates or vehicle registration. This is accomplished by viewing the Inspection/Maintenance System Status display on a scan tool. Using a scan tool, the technician can observe the Inspection/Maintenance System Status in order to verify that the vehicle meets the criteria that comply with the local area requirements. If inspection and maintenance checks are required in your region, and the customer concern is related to not passing an Inspection/Maintenance test, a link is provided to [Link target (target-id 179980-) not found] where the technician can choose the appropriate Inspection/Maintenance System Check for the actual engine application being used.

15. SYMPTOM DIAGNOSIS — At this step, the diagnostics are assuming that the only information the technician has available to diagnose the customer concern are symptoms of a problem. There are no DTCs set current or history. There may be a Driver Information Center display message or a system indicator to aid in identifying the root cause. The technician should evaluate the

symptoms and conditions described by the customer and perform the symptoms diagnostics for the area of customer concern. A link is provided to [Link target (target-id 72796-) not found] which contains a list of all symptoms related to this service manual publication.

### Diagnostic Starting Point - Vehicle

Begin the system diagnosis with *Diagnostic System Check - Vehicle 4-281*. The Diagnostic System Check - Vehicle will provide a complete strategy to locate and repair a mechanical or electrical vehicle fault. Not following this strategy may cause additional diagnostic time and/or misdiagnosis.

The Diagnostic System Check - Vehicle will provide the following strategy:

- When to verify the customer concern and identify related bulletins, recalls and preliminary information
- When to identify a control module that is not communicating, a control module that has set a DTC, and the DTC diagnostic priority
- When to address power mode concerns
- When to verify the engine cranks and runs
- When to diagnose symptom related concerns

### Diagnostic System Check - Vehicle

### Diagnostic Instructions

- Review *Strategy Based Diagnosis 4-271* for an overview of the diagnostic approach.
- *Diagnostic System Check Instructions 4-275* provides an overview of each diagnostic step.
- Continue through the Diagnostic System Check until you are directed to follow a particular diagnostic or repair procedure. Once a repair has been completed, perform the *Diagnostic Repair Verification 4-295* and verify the customer concern has been corrected.

The diagnostic procedures within this manual are developed on the assumption that the following areas function as designed:

- The 12 V battery is fully charged and cables are clean and tight. Refer to: [Link target (target-id 37781-) not found] .
- Fuses are not open. Refer to: *Power Distribution Schematics 9-909* and *Electrical Center Identification Views 9-36*.
- Ground circuits for the area of customer concern are clean, tight, and in the correct location. Refer to: *Ground Distribution Schematics 9-952* and *Harness Routing Views 9-736*.
- All connectors/terminals fully seated in the area of concern. Refer to: *Master Electrical Component List 9-988*.
- There are no aftermarket devices that affect the operation of the system. Refer to: [Link target (target-id 310488-) not found] .
- The scan tool powers up. Refer to: [Link target (target-id 148078-) not found] .

### Updating Control Module Software

For control modules that are able to be reprogrammed, updated software may become available as a part of normal bug correction, feature updates, and control module diagnostic enhancement. In the course of normal fault diagnosis, if a diagnostic procedure indicates to replace a programmable control module, the control module must first be reprogrammed with the latest available software and retested before replacement:

- If updated control module software is available, reprogram the control module and re-test to verify if updated software has corrected the concern. If the updated software has corrected the concern, no further action is required; Do not replace the control module. If the concern persists after programming the control module with the latest software, continue following the diagnostic instructions.
- If updated control module software is not available, continue following the diagnostic instructions.

### Diagnostic System Check

1. VERIFY CUSTOMER CONCERN — Understand and validate the customer concern. Inspect the visible system components for obvious damage or conditions that may cause the concern.
2. BULLETIN SEARCH — Check for related bulletins, recall/field actions and preliminary information.
3. MECHANICAL CONCERNS — Verify the symptom is not exclusively a mechanical concern.

⇒ **If the symptom is exclusively a mechanical concern**

Refer to: [Link target (target-id 72796-) not found] .

⇓ **If the symptom is not a mechanical concern**

**Note:**

- Do not clear any DTCs unless instructed to do so by a diagnostic procedure. If any DTC is Powertrain related, select Capture Info to store DTC and Freeze Frame/Failure Records to the scan tool.
- Changes in vehicle power mode can be determined by the indicators on the S38 On/Off Vehicle Switch. The indicator should match the selected power mode and change as the power mode is changed.

4. VEHICLE POWER UP VERIFICATION — Vehicle in Service Mode, verify the vehicle powers up.

⇒ **If the vehicle does not power up**

Refer to: [Link target (target-id 148321-) not found] .

⇓ **If the vehicle powers up**

**Note:** When checking for DTCs and determining what diagnostic actions should be taken, it is important to understand if the DTC is a current DTC or a history DTC. It is not uncommon for vehicles to arrive for service with a DTC that is history and the underlying fault condition no longer present. Refer to *DTC Status Information 4-284* to help determine which DTCs are current and should be diagnosed as such, and which DTCs are not current and should not be considered for diagnosis.

5. CONTROL MODULE COMMUNICATION and DTC CHECK — Using a scan tool, perform the Vehicle DTC Information function and verify at least one control module communicates with the scan tool. Record on the Repair Order the following information:
   - Any control module that is not communicating.
   - Any DTC, including symptom byte, and the control module that has set the DTC.

⇒ **If the scan tool does not communicate with any control module on the vehicle**

Refer to: [Link target (target-id 148085-) not found] .

⇓ **If the scan tool communicates with any control module**

6. CONTROL MODULE INTERNAL PERFORMANCE FAULTS — Verify there are no current control module Internal Hardware Performance DTCs set.

⇒ **If any DTC of this type is set**

Refer to: [Link target (target-id 72795-) not found] .

⇓ **If no DTC of this type is set**

**Note:** If the scan tool is unable to communicate with a control module, attempt to reestablish communication by removing and reconnecting power to the control module. This action will typically be performed in the course of normal fault diagnosis but may also be performed by removing the fuse or fuses powering the control module or by disconnecting the electrical connector(s) at the control module. If communication with the control module is reestablished after removing and reconnecting power, reprogram the control module with the latest software (if available) and re-examine the concern. Do not replace the control module without first determining if new software is available and, if so, programming the control module with the new software to determine if the software has corrected the concern.

7. CONTROL MODULE COMMUNICATION VERIFICATION — Verify the vehicle is equipped with any control module identified as not communicating on the scan tool. For a list of all control modules the vehicle may be equipped with, refer to: [Link target (target-id 148085-) not found] . With all non-communicating control module(s) identified, select the appropriate Data Communication schematic to determine the RPO(s) associated with the control module and verify the RPO is or is not present on the vehicle being diagnosed. All control modules should be communicating, as equipped.

⇒ **If the vehicle is equipped with a control module that is not communicating**

Refer to: [Link target (target-id 148085-) not found] . Select the appropriate Scan Tool Does Not Communicate with Device on CAN link in the Diagnostic Procedure column.

⇓ **If all control modules the vehicle is built with are communicating**

8. COMMUNICATION and POWER MODE FAULTS — Verify there are no current control module Power Mode or Communication DTCs set.

⇒ **If any DTC of this type is set**

Refer to: [Link target (target-id 72795-) not found] .

⇓ **If no DTC of this type is set**

**Note:** The engine may start during this test. Ensure the vehicle is out of gear and the parking brake is applied. Turn the engine OFF as soon as the crank power mode parameter has been observed.

9. POWER MODE VERIFICATION — Driver door open, observe each scan tool Power Mode data parameter while cycling through all power modes. Verify all Power Mode data parameters match the actual ignition switch/push button switch selection.

⇒ **If any Power Mode data parameter does not match**

Refer to: [Link target (target-id 148321-) not found] .

⇓ **If all Power Mode data parameters match**

10. SERIAL DATA AUTHENTICATION FAULTS - Verify DTC U1960, U1961, U1962, U3034, or U3035 is not set.

⇒ **If any of the DTCs are set**

Refer to: [Link target (target-id 72795-) not found] .

⇓ **If none of the DTCs are set**

11. PROACTIVE ALERT IDENTIFIERS — The technician is asked in this step to verify there are no Proactive Alert Identifiers set. These identifiers are displayed on the scan tool and will only appear when the OnStar subscription is active and the customer has opted into the Proactive Alert service.

⇒ **If any Proactive Alert Identifier is set**

Refer to: *Proactive Alerts List 4-296*

⇓ **If no Proactive Alert Identifier is set**

12. ENGINE CRANK and RUN VERIFICATION — Verify that the engine cranks and runs.

⇒ **If the engine does not crank**

Refer to: *Engine Does Not Crank 4-295*.

⇒ **If the engine does not run**

Refer to: [Link target (target-id 179979-) not found] .

⇓ **If the engine cranks and runs**

13. REMAINING DTC REVIEW — Verify there are no other DTCs set.

⇒ **If other DTCs are set**

Diagnose them in the order listed below. Refer to [Link target (target-id 72795-) not found] .

13.1. Voltage DTCs

13.2. Programming, Setup or Configuration or Software Performance DTCs

13.3. Component related DTCs

13.4. System related DTCs

13.5. Any remaining DTCs

⇓ **If no other DTCs are set**

14. EMISSION RELATED INSPECTION/MAINTENANCE TESTING CONCERNS — If inspection and maintenance checks are required in your region, verify the customer concern is not related to inspection/maintenance testing.

⇒ **If the customer concern is related to inspection/maintenance testing**

Refer to: [Link target (target-id 179980-) not found] .

⇓ **If the customer concern is not related to inspection/maintenance testing**

15. SYMPTOM DIAGNOSIS — Diagnose any remaining customer concern. Refer to: [Link target (target-id 72796-) not found] .

## DTC Status Information

Diagnostic Trouble Codes (DTCs) are status indicators of the vehicle's self-diagnostic and reporting capability. Each DTC represents the status of a particular internal test within a control module. Given appropriate conditions, the control module will begin actively monitoring conditions specified by the diagnostic. These are identified and referred to as Conditions for Running the DTC in service information. Each DTC has an associated status, identifying the state of the control module diagnostic. These statuses are identified when viewing DTC information on the scan tool and are described below.

### DTC Status

| Decoded Value | Description |
|---|---|
| Not Failed | Test has completed at least once this operating cycle and has passed successfully each time |
| Current | Test has completed since the last DTC clear, has met the threshold to be stored in long term memory, and has failed the most recent completed test. Test may not have run yet this operation cycle. |
| History | Test has completed since the last DTC clear, has met the threshold to be stored in long term memory, and has passed the most recent completed test. Test may not have run yet this operation cycle. |
| Pending | Test has completed and failed at least once in the current or previous operation cycle. |
| Test Not Complete this Operating Cycle | Test has completed at least once since DTC clear but has not completed yet this operation cycle. Test may have failed since clear but has not met the threshold to be stored in long term memory. |
| Test Not Complete Since DTC Cleared | Test has not completed successfully since the DTC was last cleared. |
| Failed Since DTC Cleared | Test has completed since the last DTC clear and failed at least once but has not met the threshold to be stored in long term memory and has not failed during the current or previous operation cycle. |

### This Operating Cycle

| Decoded Value | Description |
|---|---|
| Failed | Test has completed at least once this operation cycle and has failed at least once. |
| Not Failed | Test has completed at least once this operation cycle and has passed each time. |
| Passed and Failed | Test has completed and failed at least once this operation cycle, but the most recent test passed. |
| Test Not Complete for this DTC | Test has not completed yet this operation cycle. |

### Last Test

| Decoded Value | Description |
|---|---|
| Passed | Most recent test completed and passed. |
| Failed | Most recent test completed and failed. |
| Not Complete Since DTC Cleared | Test has not completed since DTC clear. |

### Since DTC Clear

| Decoded Value | Description |
|---|---|
| Failed | Test has completed at least once since DTC was cleared and has failed at least once, including the most recent test. |
| Passed and Failed | Test has completed at least once since DTC was cleared and the most recent test passed, but not all tests have passed. |
| Not Failed | Test has completed at least once since DTC was cleared and every test has passed. |
| Test Not Complete for this DTC | Test has not completed yet since DTC was cleared. |

### Warning Indicator

| Decoded Value | Description |
|---|---|
| Requested | A malfunction indicator has been commanded to be illuminated as a result of this DTC. |
| Not Requested | A malfunction indicator has not been requested as a result of this DTC. |

## Diagnosing History DTCs

It is very important to understand DTC status and its relationship to diagnosing a vehicle. If a DTC status is History, this means that the fault is not currently present on the vehicle. In any instance of a history DTC, diagnosis using a DTC diagnostic procedure in service information should not be attempted if not directly related to the customer complaint. Every diagnostic is written only for an active fault with a current DTC. Following a diagnostic procedure when only a history DTC is present will likely result in a misdiagnosis. This is foundational to *Strategy Based Diagnosis 4-271* and outlined as part of *Diagnostic System Check - Vehicle 4-281*.

If a DTC is only presented as a history DTC and is related to the customer complaint, it may be used as a guide or indicator for replicating the condition that caused the DTC to set. Observing the Conditions for Running the DTC in a DTC diagnostic procedure may help in recreating the conditions necessary for the DTC to run. Information within the DTC diagnostic procedure, such as the Fault Information table or Conditions for Setting the DTC, may also be helpful in recreating an intermittent DTC. Refer to Additional Information in *Strategy Based Diagnosis 4-271* for more detail in diagnosing intermittent concerns.

## Powertrain Diagnostic Trouble Code (DTC) Type Definitions

## Emissions Related DTCs

### Action Taken When the DTC Sets – Type A

- The control module illuminates the malfunction indicator lamp (MIL) when the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Freeze Frame/Failure Records.

### Action Taken When the DTC Sets – Type B

- The control module illuminates the MIL on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.
- The following applies to misfire DTCs:
  - If the control module detects a low level or an emission level misfire condition during 2 consecutive trips, the control module illuminates the MIL.
  - If the control module detects a high level or catalyst damaging misfire, the control module flashes the MIL at a rate of once per second.
  - If the control module detects a misfire during 2 non-consecutive trips, the stored conditions are compared with the current conditions. The control module illuminates the MIL when the following conditions occur:
    - The engine load is within 20 percent of the previous test that failed.
    - The engine speed is within 375 RPM of the previous test that failed.
    - The engine coolant temperature is in the same range of the previous test that failed.
- The following applies to fuel trim DTCs:
  - If the control module detects a fuel trim condition during 2 consecutive trips, the control module illuminates the MIL.
  - If the control module detects a fuel trim condition during 2 non-consecutive trips, the stored conditions are compared with the current conditions. The control module illuminates the MIL when the following conditions occur:
    - The engine load is within 20 percent of the previous test that failed.
    - The engine speed is within 375 RPM of the previous test that failed.
    - The engine coolant temperature is in the same range of the previous test that failed.

### Conditions for Clearing the MIL/DTC – Type A or Type B

- The control module turns OFF the MIL after 4 consecutive ignition cycles that the diagnostic runs and does not fail.

- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

## Non-Emissions Related DTCs

### Action Taken When the DTC Sets – Type C

- The control module stores the DTC information into memory when the diagnostic runs and fails.
- The MIL will not illuminate.
- The control module records the operating conditions at the time the diagnostic fails. The control module stores this information in the Failure Records.
- The driver information center, if equipped, may display a message.

### Conditions for Clearing the DTC – Type C

- A current DTC Last Test Failed clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other non-emission related diagnostic.
- Clear the DTC with a scan tool.

## Symptom Byte List

### Symptom Byte List

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 00 | No Sub Type Information | This sub type is used for failures where the base DTC text string provides the complete description of the failure itself. |
| 01 | General Electrical Failure | This sub type is used for General Electrical Failures that cannot be assigned to a specific sub type. |
| 02 | General Signal Failure | This sub type is used for General Signal Failures that cannot be assigned to a specific sub type. |
| 03 | FM (Frequency Modulated) / PWM (Pulse Width Modulated) Failure | This sub type is used for FM / PWM Failures that cannot be assigned to a specific sub type. |
| 04 | System Internal Failure | This sub type is used for control module Internal Failures that cannot be assigned to a specific sub type. |
| 05 | System Programming Failure | This sub type is used for System Programming Failures that cannot be assigned to a specific sub type. |
| 06 | Algorithm Based Failure | This sub type is used for Algorithm Based Failures that cannot be assigned to a specific sub type. |
| 07 | Mechanical Failure | This sub type is used for Mechanical Failures that cannot be assigned to a specific sub type. |
| 08 | Bus Signal / Message Failure | This sub type is used for Bus Signal / Message Failures that cannot be assigned to a specific sub type. |
| 09 | Component Failure | This sub type is used for Component Failures that cannot be assigned to a specific sub type. |
| 0A | General Electric Failures — 2 | This range specifies the standard wiring failure modes (i.e., shorts and opens), and direct current (DC) quantities related by Ohm's Law. |
| 0B | Reserved | — |
| 0C | Reserved | — |
| 0D | Reserved | — |
| 0E | Reserved | — |
| 0F | Reserved | — |
| 10 | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 11 | Circuit Short To Ground | This sub type is used for failures where the control module measures ground (battery negative) potential for greater than a specified time period or when some other value less than the low voltage limit DTC Sub Type is measured. |
| 12 | Circuit Short To Battery | This sub type is used for failures, where the control module measures vehicle system (battery positive) potential for greater than a specified time period or when some other value higher than the high voltage limit DTC Sub Type is measured. |
| 13 | Circuit Open | This sub type is used for failures, where the control module determines an open circuit via lack of bias voltage, low current flow, no change in the state of an input in response to an output, etc. |
| 14 | Circuit Short To Ground or Open | This sub type is used for failures, where the condition detected by the control module is the same for either indicated failure mode. |
| 15 | Circuit Short To Battery or Open | This sub type is used for failures, where the condition detected by the control module is the same for either indicated failure mode. |
| 16 | Circuit Voltage Below Threshold | This sub type is used for failures, where the control module measures a voltage below a specified range. |
| 17 | Circuit Voltage Above Threshold | This sub type is used for failures, where the control module measures a voltage above a specified range. |
| 18 | Circuit Current Below Threshold | This sub type is used for failures, where the control module measures current flow below a specified range. |
| 19 | Circuit Current Above Threshold | This sub type is used for failures, where the control module measures current flow above a specified range. |
| 1A | Circuit Resistance Below Threshold | This sub type is used for failures, where the control module infers a circuit resistance below a specified range. |
| 1B | Circuit Resistance Above Threshold | This sub type is used for failures, where the control module infers a circuit resistance above a specified range. |
| 1C | Circuit Voltage Out of Range | This sub type is used for failures, where the control module measures a voltage outside the expected range but not identified as too high or too low. |
| 1D | Circuit Current Out of Range | This sub type is used for failures, where the control module measures a current outside the expected range but not identified as too high or too low. |
| 1E | Circuit Resistance Out of Range | This sub type is used for failures, where the control module measures a resistance outside the expected range but not identified as too high or too low. |
| 1F | Circuit Intermittent | This sub type is used for failures, where the control module momentarily detects one of the conditions defined above, but not long enough to set a specific sub type. |
| 20 | Reserved | — |
| 21 | Signal Amplitude < Minimum | This sub type is used for failures where the control module measures a signal voltage amplitude below a specified range (e.g., low gain). |
| 22 | Signal Amplitude > Maximum | This sub type is used for failures where the control module measures a signal voltage amplitude above a specified range (e.g., gain too high). |
| 23 | Signal Stuck Low | This sub type is used for failures where the control module measures a signal that remains low when transitions are expected. |
| 24 | Signal Stuck High | This sub type is used for failures where the control module measures a signal that remains high when transitions are expected. |
| 25 | Signal Shape / Waveform Failure | This sub type is used for failures where the shape of the signal (plot of the amplitude with respect to time) is not correct, e.g., improper circuit impedance. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 26 | Signal Rate of Change Below Threshold | This sub type is used for failures where the signal transitions more slowly than the specified limit. |
| 27 | Signal Rate of Change Above Threshold | This sub type is used for failures where the signal transitions more quickly than the specified limit. |
| 28 | Signal Bias Level Out of Range / Zero Adjustment Failure | This sub type is used for failures where the control module applies a bias voltage or a zero signal level to a circuit upon which is superimposed a signal voltage (e.g., bias voltage to an Oxygen Sensor circuit, or a filtered digital m/sec2 signal while vehicle stands still for a lateral accelerator sensor module.) |
| 29 | Signal Invalid | This sub type is used for failures where the value of the signal is not plausible given the operating conditions. |
| 2A | Signal Stuck In Range | This sub type is used for failures where the value of the signal is in the normal operating range, but not correct for current operating conditions. |
| 2B | Signal Cross Coupled | This sub type is used when a signal is found to be incorrectly correlated to another signal that the control module is also monitoring, indicating that the signals are shorted together |
| 2C | Reserved | — |
| 2D | Reserved | — |
| 2E | Reserved | — |
| 2F | Signal Erratic | This sub type is used for failures where the signal is momentarily implausible (not long enough for "signal invalid") or discontinuous. |
| 30 | Reserved | — |
| 31 | No Signal | This sub type is used for failures where the control module does not detect a signal which ought to be present (e.g., wheel speed signals present for three of the four wheels and brakes not applied.) |
| 32 | Signal Low Time < Minimum | This sub type is used for failures where the control module detects the low pulse is too narrow with respect to time. |
| 33 | Signal Low Time > Maximum | This sub type is used for failures where the control module detects the low pulse is too wide with respect to time. |
| 34 | Signal High Time < Minimum | This sub type is used for failures where the control module detects the high pulse is too narrow with respect to time. |
| 35 | Signal High Time > Maximum | This sub type is used for failures where the control module detects the high pulse is too wide with respect to time. |
| 36 | Signal Frequency Too Low | This sub type is used for failures where the control module detects excessive duration for one cycle of the output across a specified sample size. |
| 37 | Signal Frequency Too High | This sub type is used for failures where the control module detects insufficient duration for one cycle of the output across a specified sample size. |
| 38 | Signal Frequency Incorrect | This sub type is used for failures where the control module measures an incorrect number of cycles in a given time period. |
| 39 | Signal Has Too Few Pulses | This sub type is used for failures where the control module measures too few pulses (e.g., position is calibrated in counts from one extreme to the other). |
| 3A | Signal Has Too Many Pulses | This sub type is used for failures where the control module measures too many pulses (e.g., position is calibrated in counts from one extreme to the other). |
| 3B | Reserved | — |
| 3C | Reserved | — |
| 3D | Reserved | — |
| 3E | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 3F | Reserved | — |
| 40 | Reserved | — |
| 41 | General Checksum Failure | This sub type is used by the control module to indicate an incorrect checksum calculation where memory type is not specified. |
| 42 | General Memory Failure | This sub type is used by the control module to indicate a memory failure where memory type is not specified. |
| 43 | Special Memory Failure | This sub type is used by the control module to indicate a memory failure where the specific memory type is not defined in this category. |
| 44 | Data Memory Failure | This sub type is used by the control module to indicate a data (or working) memory failure for embedded systems using FLASH memory. This is equivalent to RAM in RAM/ROM/EEPROM embedded systems. |
| 45 | Program Memory Failure | This sub type is used by the control module to indicate a program memory failure for embedded systems using FLASH memory. This is equivalent to ROM in RAM/ROM/EEPROM embedded systems. |
| 46 | Calibration / Parameter Memory Failure | This sub type is used by the control module to indicate a calibration / parameter memory failure for embedded systems using FLASH memory. This is equivalent to EEPROM in RAM/ROM/EEPROM embedded systems. |
| 47 | Watchdog / Safety µC Failure | This sub type is used by the control module to indicate a watchdog / safety µC failure, or a failure in the execution of operational software. |
| 48 | Supervision Software Failure | This sub type is used by the control module to indicate a supervision software failure. |
| 49 | Internal Electronic Failure | This sub type is used by the control module to indicate the detection of an internal circuit failure. |
| 4A | Incorrect Component Installed | This sub type is used by the control module to indicate a mismatch between the hardware connected to the control module and the hardware expected by the control module. |
| 4B | Over Temperature | This sub type is used by the control module to indicate the detection of an internal temperature above the expected range. |
| 4C | Reserved | — |
| 4D | Reserved | — |
| 4E | Reserved | — |
| 4F | Reserved | — |
| 50 | Reserved | — |
| 51 | Not Programmed | This sub type is used by the control module to indicate that programming is required. |
| 52 | Not Activated | This sub type is used by the control module to indicate that some portion of the program has not been enabled. |
| 53 | Deactivated | This sub type is used by the control module to indicate that that some portion of the program has been disabled. |
| 54 | Missing Setup/Learn | This sub type is used by the control module to indicate that an operational range, etc., for a sensor or actuator must be taught to the control module, e.g. by programming or learning. |
| 55 | Not Configured | This sub type is used by the control module to indicate the need to enter (program) the sub system option content or the vehicle option content. |
| 56 | Invalid / Incompatible Configuration | This sub type indicates a control module or system configuration that cannot be valid, e.g. to have mutually exclusive options set on at the same time, or a set up that is not supported by the currently installed hardware/software. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 57 | Invalid / Incompatible Software Component | This sub type is used by the control module to indicate that a software component (calibration or program) has been identified as invalid for the control module or incompatible with other hardware or software identified by the control module, e.g. a downloaded calibration software component is incompatible with a permanent or downloaded strategy software component. |
| 58 | Reserved | — |
| 59 | Reserved | — |
| 5A | Reserved | — |
| 5B | Reserved | — |
| 5C | Reserved | — |
| 5D | Reserved | — |
| 5E | Reserved | — |
| 5F | Reserved | — |
| 60 | Reserved | — |
| 61 | Signal Calculation Failure | This sub type is used for algorithm based calculation failures where the calculated value is outside the expected range. |
| 62 | Signal Compare Failure | This sub type is used for failures where the control module compares two or more input parameters for plausibility but cannot specifically identify the component that is faulted. |
| 63 | Circuit / Component Protection Time-Out | This sub type is used for failures where the control module detects a function is active for greater than a specified time period. |
| 64 | Signal Plausibility Failure | This sub type is used for failures where the control module detects a single input parameter is operating outside the plausible range. |
| 65 | Signal Has Too Few Transitions / Events | This sub type is used for failures where the control module monitors a parameter over time within specified limits and detects fewer than the expected number of transitions. |
| 66 | Signal Has Too Many Transitions / Events | This sub type is used for failures where the control module monitors a parameter over time within specified limits and detects more than the expected number of transitions. |
| 67 | Signal Incorrect After Event | This sub type is used for failures where the control module does not see the correct change of a parameter or group of parameters in response to a particular event. |
| 68 | Event Information | This sub type is used by the control module to indicate the detection of a system event that was not caused by the control module itself but forces the control module to store a DTC (e.g. missing functionality from another system/control module). |
| 69 | Reserved | — |
| 6A | Reserved | — |
| 6B | Reserved | — |
| 6C | Reserved | — |
| 6D | Reserved | — |
| 6E | Reserved | — |
| 6F | Reserved | — |
| 70 | Reserved | — |
| 71 | Actuator Stuck | This sub type is used for failures where the control module does not detect any mechanical motion in response to energizing a motor, solenoid, relay, etc. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 72 | Actuator Stuck Open | This sub type is used for failures where the control module does not detect any mechanical motion upon commanding the operation of a motor, solenoid, relay, etc., to close some piece of equipment. |
| 73 | Actuator Stuck Closed | This sub type is used for failures where the control module does not detect any mechanical motion upon commanding the operation of a motor, solenoid, relay, etc., to open some piece of equipment. |
| 74 | Actuator Slipping | This sub type is used for failures where the control module detects excessive duration to command a motor, solenoid, relay, etc., to move a piece of equipment to a desired position. |
| 75 | Emergency Position Not Reachable | This sub type is used for failures where the control module is unable to command a motor, solenoid, relay, etc., to move a piece of equipment to the emergency position. |
| 76 | Wrong Mounting Position | This sub type is used for failures where the control module detects incorrectly mounted components, e.g., acceleration sensor showing a position error of 90°. |
| 77 | Commanded Position Not Reachable | This sub type is used for failures where the control module is unable to command a motor, solenoid, relay, etc., to move a piece of equipment to the commanded position either due to a failure in the actuator or its mechanical environment. |
| 78 | Alignment or Adjustment Incorrect | This sub type is used for failures where the control module detects incorrectly adjusted or aligned components. |
| 79 | Mechanical Linkage Failure | This sub type is used for failures where the control module detects that the actuator is operational but the driven device is not operating, e.g., drive cable for power sliding door broken. |
| 7A | Fluid Leak or Seal Failure | This sub type is used for failures where the control module detects that a mechanical component has an unexpected gas or liquid flow in, out, or through the component. |
| 7B | Low Fluid Level | This sub type is used for failures where the control module detects that a fluid level is too low for proper operation of the system. |
| 7C | Slow Response | This sub type is used where control module has detected a response that is longer than expected or a degraded rate of change in the monitored component or system. |
| 7D | Reserved | — |
| 7E | Actuator Stuck On | This sub type is used for failures where the control module detects the actuator mechanical function is fixed in the ON / applied state |
| 7F | Actuator Stuck Off | This sub type is used for failures where the control module detects the actuator mechanical function is fixed in the OFF / Released state. |
| 80 | Reserved | — |
| 81 | Invalid Serial Data Received | This sub type is used by the control module to indicate a signal was received with the corresponding validity bit equal to "invalid" or post processing of the signal determines it is invalid. |
| 82 | Alive / Sequence Counter Incorrect / Not Updated | This sub type is used by the control module to indicate that a signal was received without the corresponding rolling count value being properly updated. |
| 83 | Value of Signal Protection Calculation Incorrect | This sub type is used by the control module to indicate, that a message was processed with an incorrect protection (checksum) calculation. |
| 84 | Signal Below Allowable Range | This sub type is used for failures where some circuit quantity, reported via serial data, is below a specified range. |
| 85 | Signal Above Allowable Range | This sub type is used for failures where some circuit quantity, reported via serial data, is above a specified range. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 86 | Signal Invalid | This sub type is used for failures where some circuit quantity, reported via serial data, is not plausible given the operating conditions. |
| 87 | Missing Message | This sub type is used for failures where one (or more) expected message(s) is not received, e.g., periodic transmission where the repetition time is too high, or message not received as a result of unforeseen reset events of the concerning component (e.g. engine control unit communicating with ABS). |
| 88 | Bus off | This sub type is used for failures where a data bus is not available. |
| 89 | Data Transfer Failure | This subtype is for failures where an ECU requests a data transfer from an external source (off-board, on-board, or another ECU) and the data transfer initiates but fails to complete. |
| 8A | Reserved | — |
| 8B | Reserved | — |
| 8C | Reserved | — |
| 8D | Reserved | — |
| 8E | Reserved | — |
| 8F | Erratic | This sub type is used for failures where the signal, reported via serial data, is momentarily implausible or discontinuous. |
| 90 | Reserved | — |
| 91 | Parametric | This sub type is used for failures where the control module has detected that a component parameter (e.g., capacitance or inductance) is outside its expected range. |
| 92 | Performance or Incorrect Operation | This sub type is used for failures where the control module has detected that the component performance is outside its expected range or operating in an incorrect way. |
| 93 | No Operation | This sub type is used for failures where the control module has detected that the component is not operating. |
| 94 | Unexpected Operation | This sub type is used for failures where the control module has detected that the component is operating in a way or at a time that it has not been commanded to operate. |
| 95 | Incorrect Assembly | This sub type is used for failures where the control module has detected that the component has been incorrectly installed (e.g., hydraulic pipes crossed over, circuits cross wired) or polarity errors. |
| 96 | Component Internal Failure | This sub type is used for failures where the control module has received an indication about the component that indicates a failure (e.g., an intelligent actuator or sensor) is indicating an internal fault. |
| 97 | Component or System Operation Obstructed or Blocked | This sub type is used for failures where the control module has detected that the operation of a component is prevented by an obstruction, e.g., advanced cruise system radar beam obstructed. |
| 98 | Component or System Over Temperature | This sub type is used for failures where the control module has detected that the temperature is too high for the correct operation of the component or system. |
| 99 | Exceeded Learning Limit | This sub type is used for failures where the control module has detected that the component or system has exceeded the expected range allowed for learning component tolerances. |
| 9A | Component or System Operating Conditions | This sub type is used for failures where the control module has detected that environmental or other operating conditions are either temporarily or permanently outside the design limits for correct operation such that all or part of a component function is inhibited or fails, e.g. a radio is disabled because its LCD display or its CD mechanism cannot operate at a low ambient temperature. |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| 9B | High/Excessive Flow | This sub type is used for failures where the control module has detected that the component or system is operating above the expected flow range flow, e.g. too much EGR at idle. |
| 9C | Low/Insufficient Flow | This sub type is used for failures where the control module has detected that the component or system is operating below the expected flow range flow, e.g. too little EGR at part throttle. |
| 9D | Component or System Under Temperature | This sub type is used for failures where the control module has detected that the temperature is too low for the correct operation of the component or system. |
| 9E | Stuck On | This sub type is used for failures where the control module detects the electrical circuit or switch is fixed in the ON / Applied state |
| 9F | Stuck Off | This sub type is used for failures where the control module detects the electrical circuit or switch is fixed in the OFF / Released state. |
| A0 | Reserved | — |
| A1 | System Voltage | This sub type is used for failures, where the control module system voltage is outside the expected range but not identified as too high or too low. |
| A2 | System Voltage Low | This sub type is used for failures where the control module system voltage is below a specified range. |
| A3 | System Voltage High | This sub type is used for failures where the control module system voltage is above a specified range. |
| A4 | Reserved | — |
| A5 | Reserved | — |
| A6 | Reserved | — |
| A7 | Reserved | — |
| A8 | Reserved | — |
| A9 | Reserved | — |
| AA | Reserved | — |
| AB | Reserved | — |
| AC | Reserved | — |
| AD | Reserved | — |
| AE | Reserved | — |
| AF | Reserved | — |
| B0 | Reserved | — |
| B1 | Reserved | — |
| B2 | Reserved | — |
| B3 | Reserved | — |
| B4 | Reserved | — |
| B5 | Reserved | — |
| B6 | Reserved | — |
| B7 | Reserved | — |
| B8 | Reserved | — |
| B9 | Reserved | — |
| BA | Reserved | — |
| BB | Reserved | — |
| BC | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| BD | Reserved | — |
| BE | Reserved | — |
| BF | Reserved | — |
| C0 | Reserved | — |
| C1 | Reserved | — |
| C2 | Reserved | — |
| C3 | Reserved | — |
| C4 | Reserved | — |
| C5 | Reserved | — |
| C6 | Reserved | — |
| C7 | Reserved | — |
| C8 | Reserved | — |
| C9 | Reserved | — |
| CA | Reserved | — |
| CB | Reserved | — |
| CC | Reserved | — |
| CD | Reserved | — |
| CE | Reserved | — |
| CF | Reserved | — |
| D0 | Reserved | — |
| D1 | Reserved | — |
| D2 | Reserved | — |
| D3 | Reserved | — |
| D4 | Reserved | — |
| D5 | Reserved | — |
| D6 | Reserved | — |
| D7 | Reserved | — |
| D8 | Reserved | — |
| D9 | Reserved | — |
| DA | Reserved | — |
| DB | Reserved | — |
| DC | Reserved | — |
| DD | Reserved | — |
| DE | Reserved | — |
| DF | Reserved | — |
| E0 | Reserved | — |
| E1 | Reserved | — |
| E2 | Reserved | — |
| E3 | Reserved | — |
| E4 | Reserved | — |
| E5 | Reserved | — |
| E6 | Reserved | — |

| Symptom Byte | Symptom Byte Description | Symptom Byte Definition |
|---|---|---|
| E7 | Reserved | — |
| E8 | Reserved | — |
| E9 | Reserved | — |
| EA | Reserved | — |
| EB | Reserved | — |
| EC | Reserved | — |
| ED | Reserved | — |
| EE | Reserved | — |
| EF | Reserved | — |
| F0 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F1 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F2 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F3 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F4 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F5 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F6 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F7 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F8 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| F9 | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FA | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FB | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FC | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FD | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FE | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |
| FF | Manufacturer Defined | This value is reserved for vehicle manufacturer/system supplier use. |

## Engine Does Not Crank

Refer to the appropriate diagnostic procedure below for the symptom observed.

- Starter Malfunction
- Engine Cranks Slowly

## Diagnostic Repair Verification

**Note:** After a repair has been made, some DTCs require the ignition to be turned Off and then back On before the scan tool function will clear the DTC.

1. Ignition/Vehicle » Off
2. Install any components or connectors that have been removed or replaced during diagnosis.
3. Perform any adjustment, programming or setup procedures that are required when a component or module is removed or replaced.
4. Perform the following action:
    - 4.1. Ignition » On / Vehicle » In Service Mode
    - 4.2. Clear the DTCs.

  4.3. Ignition/Vehicle » Off
  4.4. Driver Door» Open& Close
  4.5. Wait for greater than 2 min. orInstrument Panel = Off

5. Perform the Circuit/System Verification and verify the result ends with an All OK — If available

   or

   If the repair was related to a DTC, duplicate the Conditions for Running the DTC and use the Freeze Frame/Failure Records, if applicable, in order to verify the DTC does not set. If the DTC sets or another DTC is present » Refer to: [Link target (target-id 72795-) not found]

   or

   If the repair was symptom related, duplicate the conditions under which the customer concern occurred to verify the repair. If the customer concern reoccurs or another symptom is present » Refer to: [Link target (target-id 72796-) not found]

### Proactive Alerts List

This master list includes all applicable Proactive Alert Identifiers in alphanumeric order.

Proactive alert identifiers are stored in the K73 Telematics Communication Interface Module and can only be cleared using a scan tool.

**Note:** If the concern is still present after following the steps for Diagnostics in any of the Proactive Alert Identifiers, contact GM TAC for further assistance. The GM TAC Agent will arrange for the stuck Proactive Alert to be cleared from OnStar Back Office.

**Proactive Alerts List**

| Proactive Alert Service Message | Diagnostic Procedure |
|---|---|
| SAC001 | 12 V Starting and Charging- [Link target (target-id 276794-) not found] |
| SAC002 | 12 V Starting and Charging- [Link target (target-id 276795-) not found] |
| SAC003 | 12 V Starting and Charging- [Link target (target-id 276796-) not found] |
| SAC004 | 12 V Starting and Charging- [Link target (target-id 276797-) not found] |
| SAC005 | 12 V Starting and Charging- [Link target (target-id 276798-) not found] |

# Description and Operation

## Proactive Alerts Description and Operation

### Proactive Alert System Overview

**Note:** The customer must enroll their vehicle in this program through the OnStar website or with an OnStar advisor to receive Proactive Alerts. When the customer enrolls their vehicle, they select their notification preferences (email address, in-vehicle alert, and/or text message). They also identify their preferred service provider which is often the selling dealer.

This feature collects and stores specific system performance data each ignition cycle. The data is then transmitted via the cellular system (OnStar) when the On/Off Vehicle Switch has been in Run or Accessory power mode for ten minutes. The transmitted data is stored off-board the vehicle and analyzed by special algorithms to detect degraded performance. When monitored system performance degrades to predetermined levels, the off-board system sends a Proactive Alert identifier. The affected system is identified within the alert.

When a Proactive Alert is set, one or more of the following may occur:

- E-mail and/or text message is sent to the customer
- E-mail is sent to the preferred service provider (Customer Experience Manager at GM Dealers)
- A message is sent to the vehicle through the cellular system

When the vehicle receives the Proactive Alert identifier, it is stored in the Communication Interface Module. When stored, the Communication Interface Module may request a specific identifier to display on the radio and/or play an audio message. Each identifier is displayed and/or played one time only when the vehicle is started after the Alert has been set. If there is no performance improvement detected within seven days and then again at fourteen days, the system will send a reminder which contains the same identifier as the original.

When the collected data indicates component performance is normal again, no reminder alerts are sent and the system continues to monitor as before the active alert.

Proactive Alert identifiers stored in the Communication Interface Module will clear once the system is repaired. They can also be cleared using a scan tool, if desired. Ask the customer if they can produce the E-mail and check the date it was sent if you suspect that it is not active. If the customer is unable to provide the documentation, the Proactive Alert can be verified utilizing the scan tool: “Vehicle Diagnostics” >> “Vehicle Proactive Alerts”, or Service Workbench Alerts.

Note: The identifier will not be retained if the Communication Interface Module is replaced.

**Note:** If the concern is still present after following the steps for Diagnostics in any of the Proactive Alert Identifiers, contact GM TAC for further assistance. The GM TAC Agent will arrange for the stuck Proactive Alert to be cleared from OnStar Back Office.

## Power of Green Overview

**Note:** Power of Green is only available for vehicles that are enrolled in Proactive Alerts.

“Power of Green” utilizes available vehicle data collected through OnStar to establish a history of 12V battery health and determine a Battery Condition. The history is based on Battery voltage, current, and other prognostic-related data, which is collected onboard during every ignition cycle. The current Battery Condition can be accessed for enrolled vehicles via the Dashboard in Techline Connect (TLC). Battery Condition will include a timestamp (date/time) with the OnStar logo if valid.

Battery Condition will be one of the following four statuses:

### Green

- “OnStar monitoring indicated good battery condition.”
- No fault detected internal to Battery
- It is unlikely that the Battery will require replacement at this time

### Red

- “Battery replacement recommended.”
- SAC001 – Battery Low Cranking Capability Due to Shorted Cell
- Battery testing is NOT required, therefore a print out of the Warranty Code when the battery is replaced for SAC001 is not required.
- Follow SI procedure for Proactive Alert Identifier SAC001

### Yellow

- “Starting and Charging proactive alerts detected. Please consult Service Information to diagnose the concern.”
- One of the following:
  - SAC002 – Low Cranking Capability Due to Battery High Resistance
  - SAC003 – Low Cranking Capability Due to Battery Low State of Charge
  - SAC004 – Low Cranking Capability Due to High Resistance in Starter System
  - SAC005 – Low Cranking Capability Due to High Resistance in Battery or Short in Starter System
- Follow SI procedure for appropriate Proactive Alert Identifier

### Grey

- “Not enough data available to determine battery condition.”
- One of the following:
  - Vehicle is not enrolled in OnStar Proactive Alerts
  - Inability to contact the Power of Green data service
  - Insufficient recent ignition cycles to make a Red/Yellow/Green determination
- If a Battery issue is suspected, proceed to Battery Inspection/Test

Updated Battery Condition data may be obtained by selecting “Refresh” button next to the timestamp.

Note: Since the Green status is dependent on a history of battery health, the Battery Condition may not update immediately and turn Green if the battery is replaced.

While the vehicle is being serviced, the Battery Condition may change from Green depending on Service actions (e.g. if battery is disconnected or becomes discharged, status may change).

## Section 5

# Driveline/Axle

**Rear Drive Axle** .................................... 5-2
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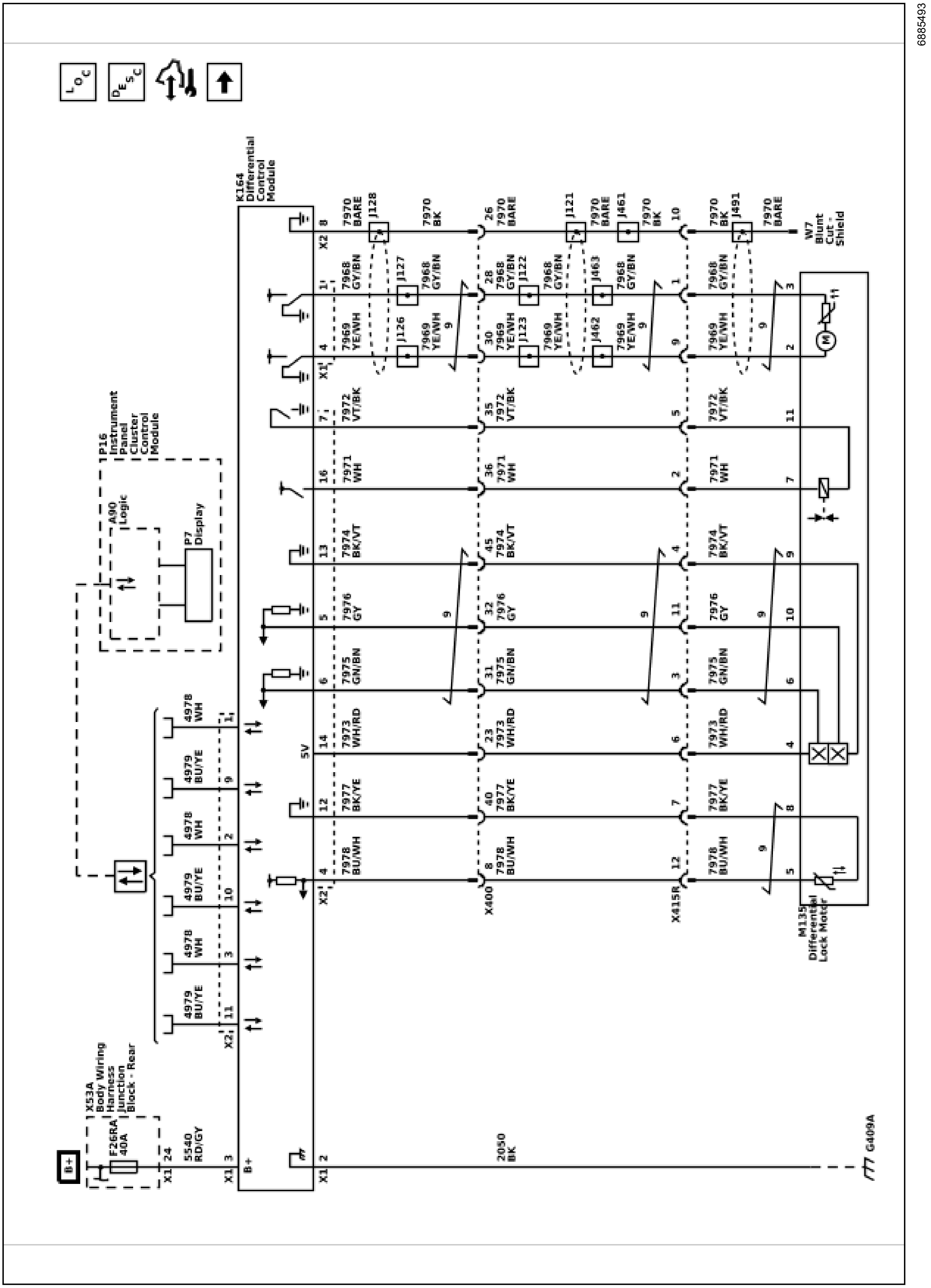
    Differential Lock Schematics ...................5-3
  **Description and Operation** .....................5-5
    Rear Drive Axle Description and Operation ................................................ 5-5
    Rear Drive Axle Description and Operation ................................................ 5-5

# Driveline/Axle

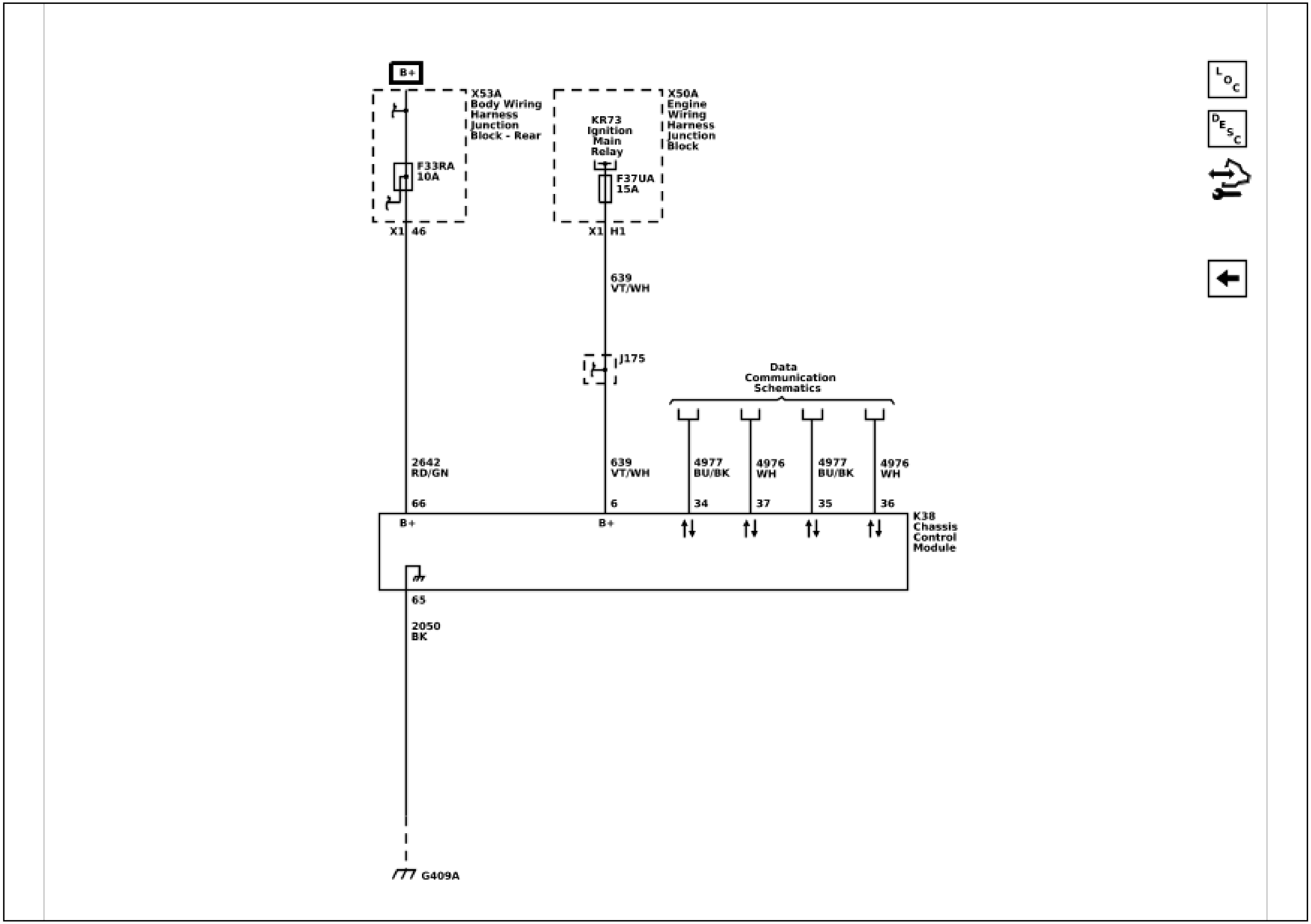
## Rear Drive Axle

### Schematic and Routing Diagrams

## Differential Lock Schematics (Electronic Limited-Slip Rear Axle (G96))


6885493
B+
F26RA 40A
X53A Body Wiring Harness Junction Block - Rear
X1 24
5540 RD/GY
X1 3
B+
X1 2
2050 BK
G409A
K164 Differential Control Module
P16 Instrument Panel Cluster Control Module
A90 Logic
P7 Display
4979 BU/YE
4978 WH
X2 11
3
10
2
9
1
5V
X2 4
7978 BU/WH
X2 12
7977 BK/YE
14
7973 WH/RD
6
7975 GN/BN
5
7976 GY
13
7974 BK/VT
16
7971 WH
7
7972 VT/BK
X1 4
7969 YE/WH
1
7968 GY/BN
X2 8
7970 BARE
J128
7970 BK
J126
J127
X400
8
40
23
31
32
45
36
35
30
28
26
J123
J122
J121
J462
J463
J461
X415R
12
7
6
3
11
4
2
5
9
1
10
J491
W7 Blunt Cut - Shield
M135 Differential Lock Motor
M
8
9
M

## Differential Lock Schematics (Chassis Control Module (G96))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F33RA
10A
X1 46
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main
Relay
F37UA
15A
X1 H1
639
VT/WH
J175
Data
Communication
Schematics
2642
RD/GN
66
B+
639
VT/WH
6
B+
4977
BU/BK
34
4976
WH
37
4977
BU/BK
35
4976
WH
36
K38
Chassis
Control
Module
65
2050
BK
G409A

6885494

# Description and Operation

## Rear Drive Axle Description and Operation

Rear axle for this vehicle consist of the following components:

- Axle Shaft – Right
- Axle Shaft – Left
- Differential
- Differential Pinion Gear
- Differential Ring Gear
- Rear Axle Housing

The rear axle is a mechanical limited slip differential. In a conventional differential, if one wheel spins, the opposite wheel will generate only as much torque as the wheel with the least amount of traction. In a limited slip differential, part of the ring gear torque is transmitted through clutch packs which contain multiple discs. In operation, two forces engage the limited slip differential's clutches. The first is the pre-load force within the clutch packs. The second is the separating forces generated by the side gears as torque is applied through the ring gear. The limited slip design provides the action needed for turning corners and for driving in a straight line when traction is uneven. When one wheel loses traction, the clutch packs transfer additional torque to the wheel having the most traction. Limited slip differential resist wheel spin on bumpy roads and provides greater pulling power when one wheel loses traction. If both wheels slip due to unequal traction, limited slip operation is normal. Also in extreme case of unequal traction, the wheel with the least amount of traction may spin.

## Rear Drive Axle Description and Operation

The K164 Differential Control Module’s function is to control the electronic limited slip differential. The K164 Differential Control Module receives torque request through CAN-Bus and applies torque to the rear differential.

The differential system contains the following main components:

- M135 Differential Lock Motor
- Position Sensor (internal to motor)
- Temperature Sensor (internal to motor)

The K164 Differential Control Module is located in the trunk compartment. The locking torque causes a multiplication of wheel torque, which can be used to improve traction and/or vehicle dynamics.  The M135 Differential Lock Motor is actuating a multidisc friction clutch via a reduction gear set. The M135 Differential Lock Motor is used to close and open the clutch. The K164 Differential Control Module controls the M135 Differential Lock Motor. The K164 Differential Control Module gets the required information from the sensors of the differential system and from the CAN-Bus.

## Section 6

# Driver Information and Entertainment

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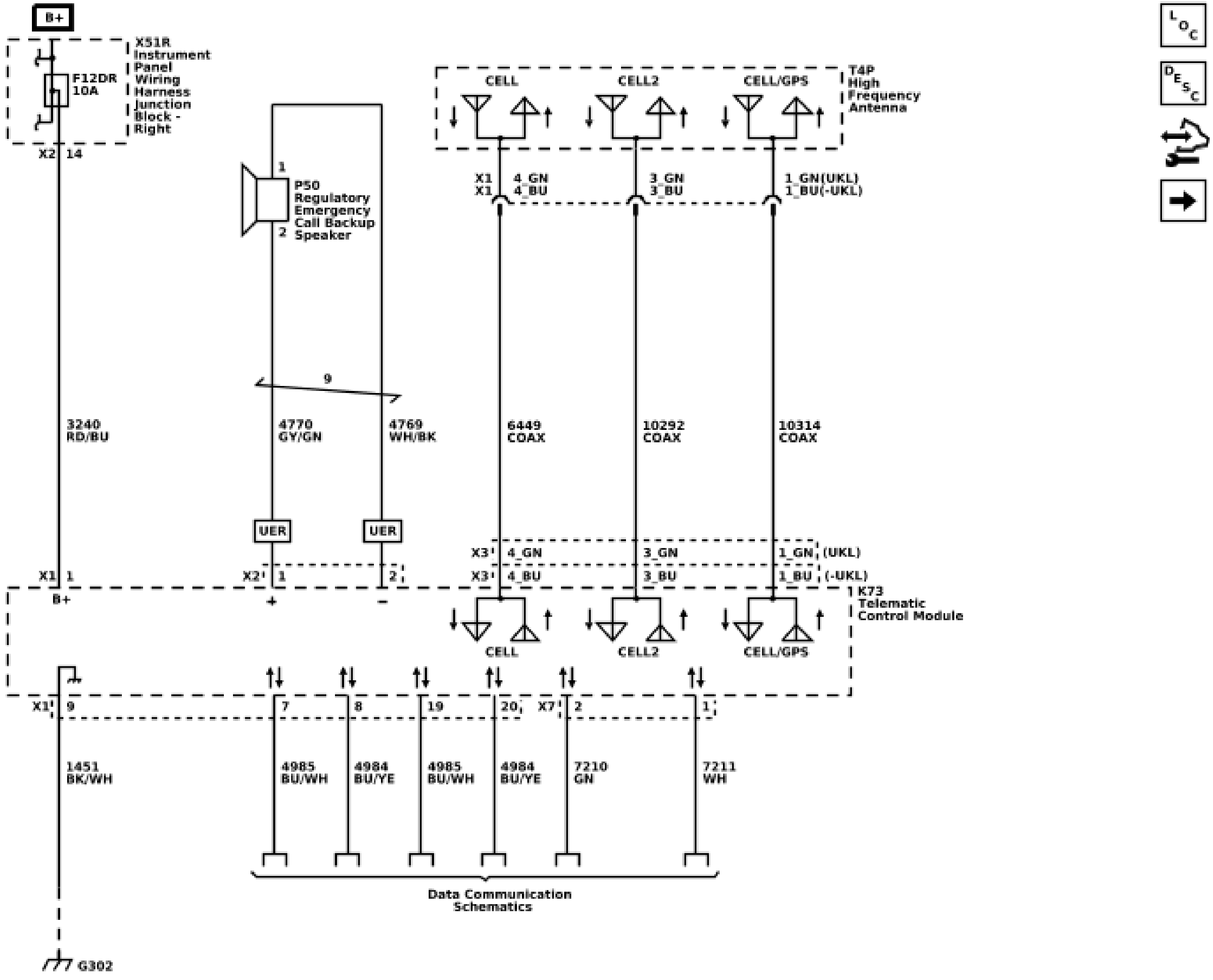
# Driver Information and Entertainment

## Cellular, Entertainment, and Navigation

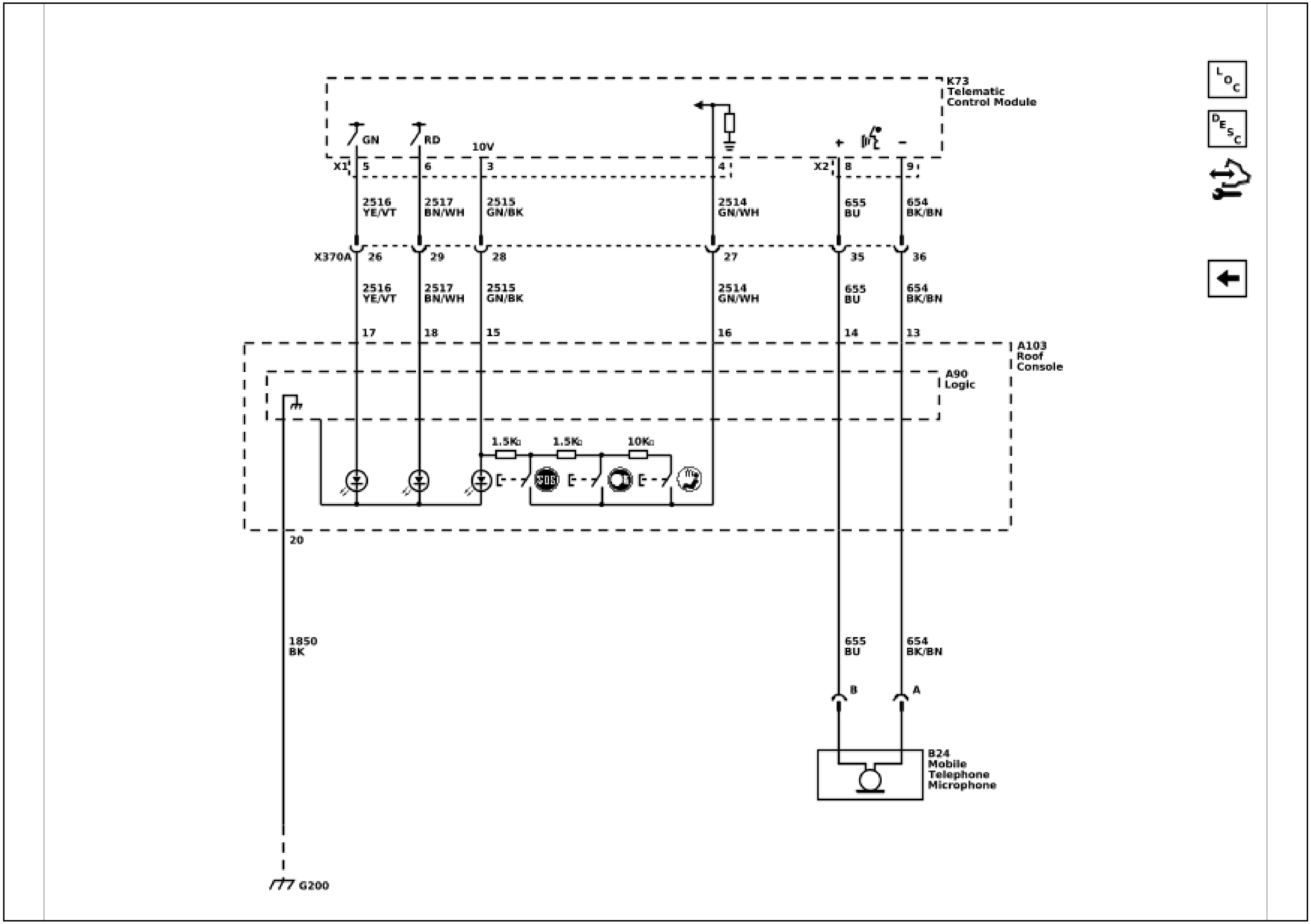
### Schematic and Routing Diagrams

## OnStar/Telematics Schematics (Power, Ground, Serial Data, Antennas, and Emergency Call Backup Speaker)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F12DR 10A
X2 14
3240 RD/BU
X1 1
B+
P50 Regulatory Emergency Call Backup Speaker
1
2
9
4770 GY/GN
4769 WH/BK
UER
UER
X2 1
2
+
−
T4P High Frequency Antenna
CELL
CELL2
CELL/GPS
X1 4_GN
X1 4_BU
3_GN
3_BU
1_GN(UKL)
1_BU(-UKL)
6449 COAX
10292 COAX
10314 COAX
X3 4_GN
X3 4_BU
3_GN
3_BU
1_GN (UKL)
1_BU (-UKL)
K73 Telematic Control Module
CELL
CELL2
CELL/GPS
X1 9
7
8
19
20
X7 2
1
1451 BK/WH
4985 BU/WH
4984 BU/YE
4985 BU/WH
4984 BU/YE
7210 GN
7211 WH
Data Communication Schematics
G302

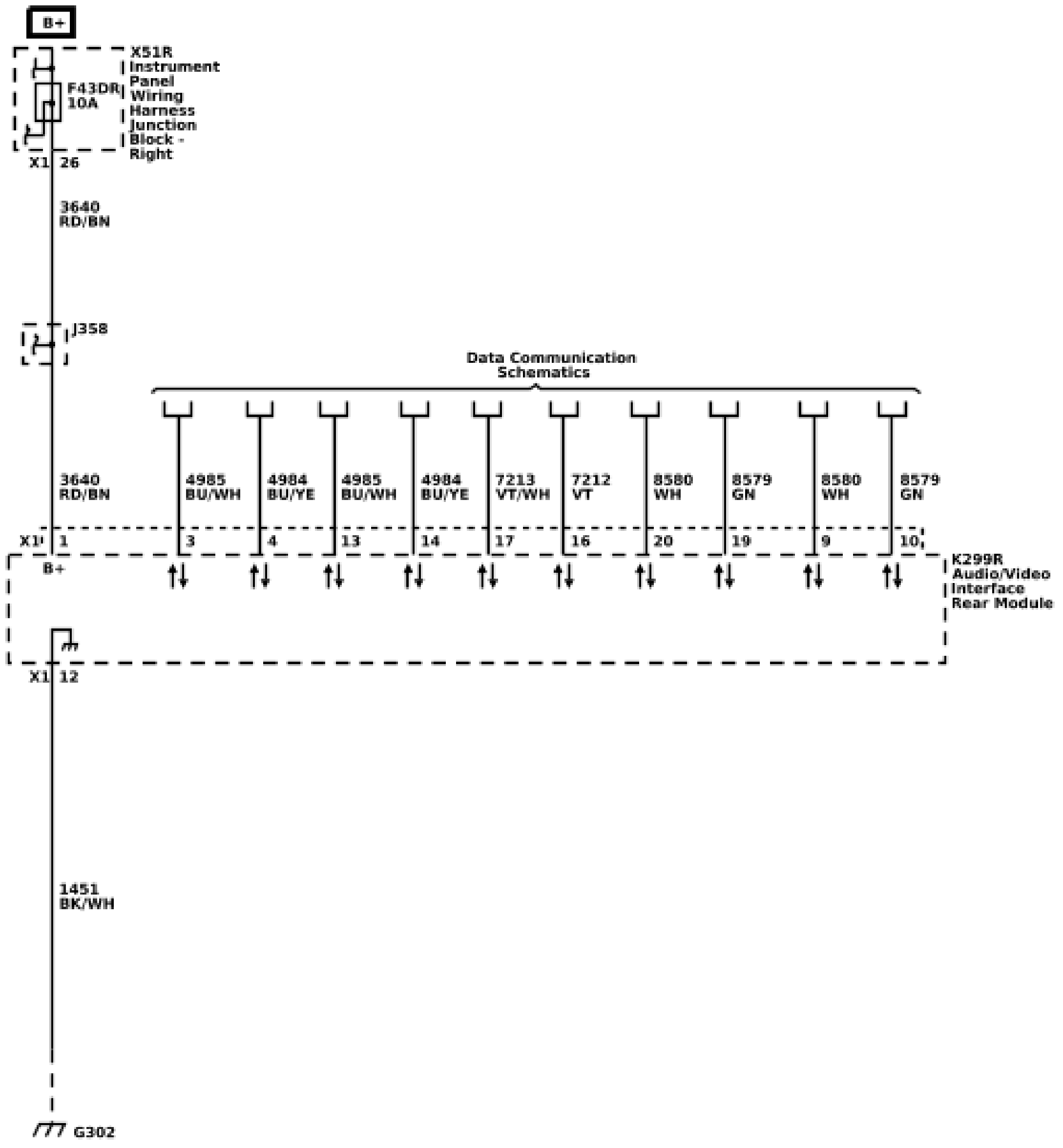
6885507

## OnStar/Telematics Schematics (Controls and Audio Signals)


K73
Telematic
Control Module
GN
RD
10V
+
-
X1
5
6
3
4
X2
8
9
2516
YE/VT
2517
BN/WH
2515
GN/BK
2514
GN/WH
655
BU
654
BK/BN
X370A
26
29
28
27
35
36
17
18
15
16
14
13
A103
Roof
Console
A90
Logic
1.5KΩ
1.5KΩ
10KΩ
SOS
20
1850
BK
B
A
B24
Mobile
Telephone
Microphone
G200

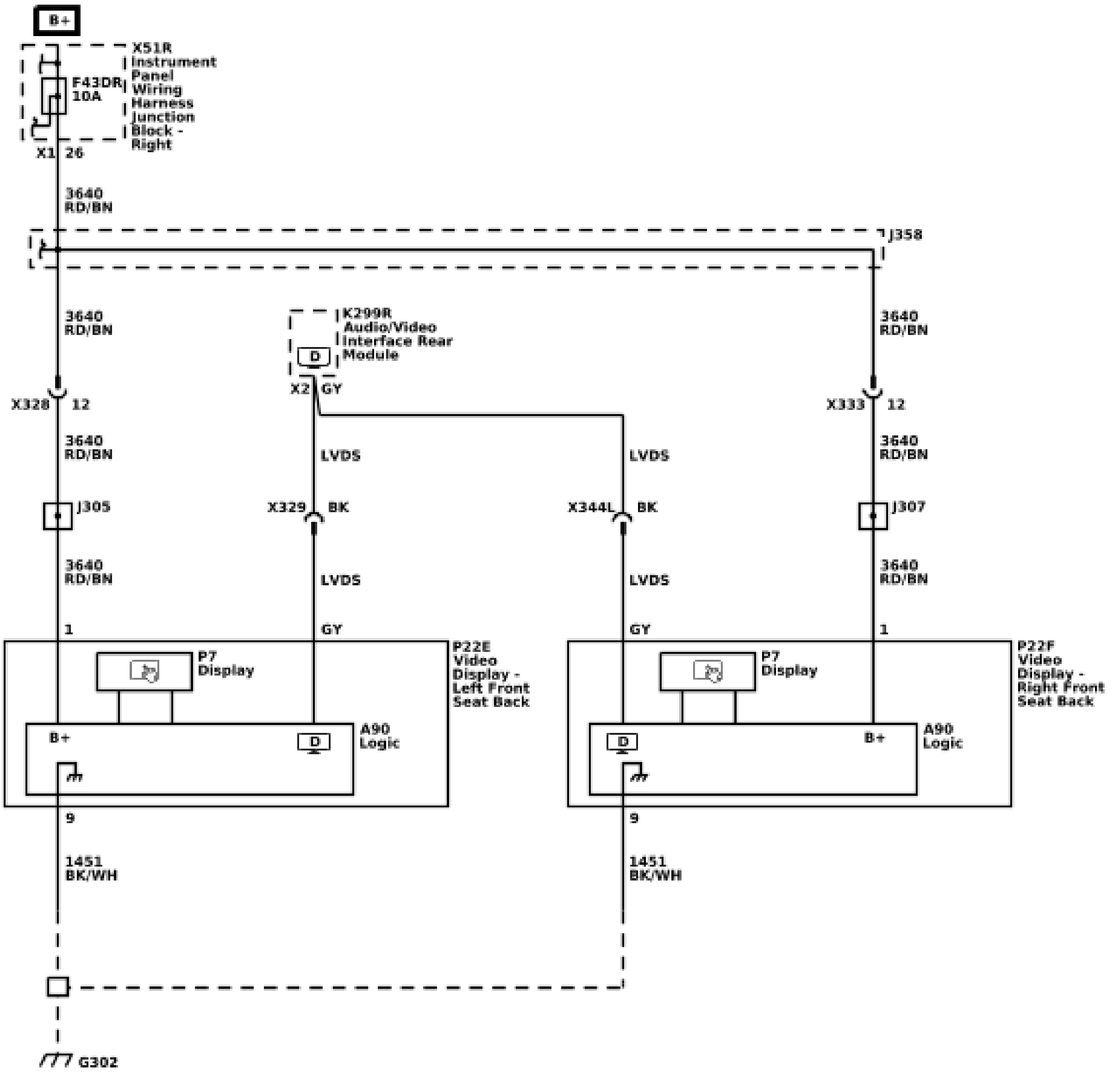
6885508

## Video System Schematics (Rear Video Interface Module Power, Ground, and Serial Data (UW9))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F43DR 10A
X1 26
3640 RD/BN
J358
Data Communication Schematics
3640 RD/BN
4985 BU/WH
4984 BU/YE
4985 BU/WH
4984 BU/YE
7213 VT/WH
7212 VT
8580 WH
8579 GN
8580 WH
8579 GN
X1 1
3
4
13
14
17
16
20
19
9
10
B+
K299R Audio/Video Interface Rear Module
X1 12
1451 BK/WH
G302

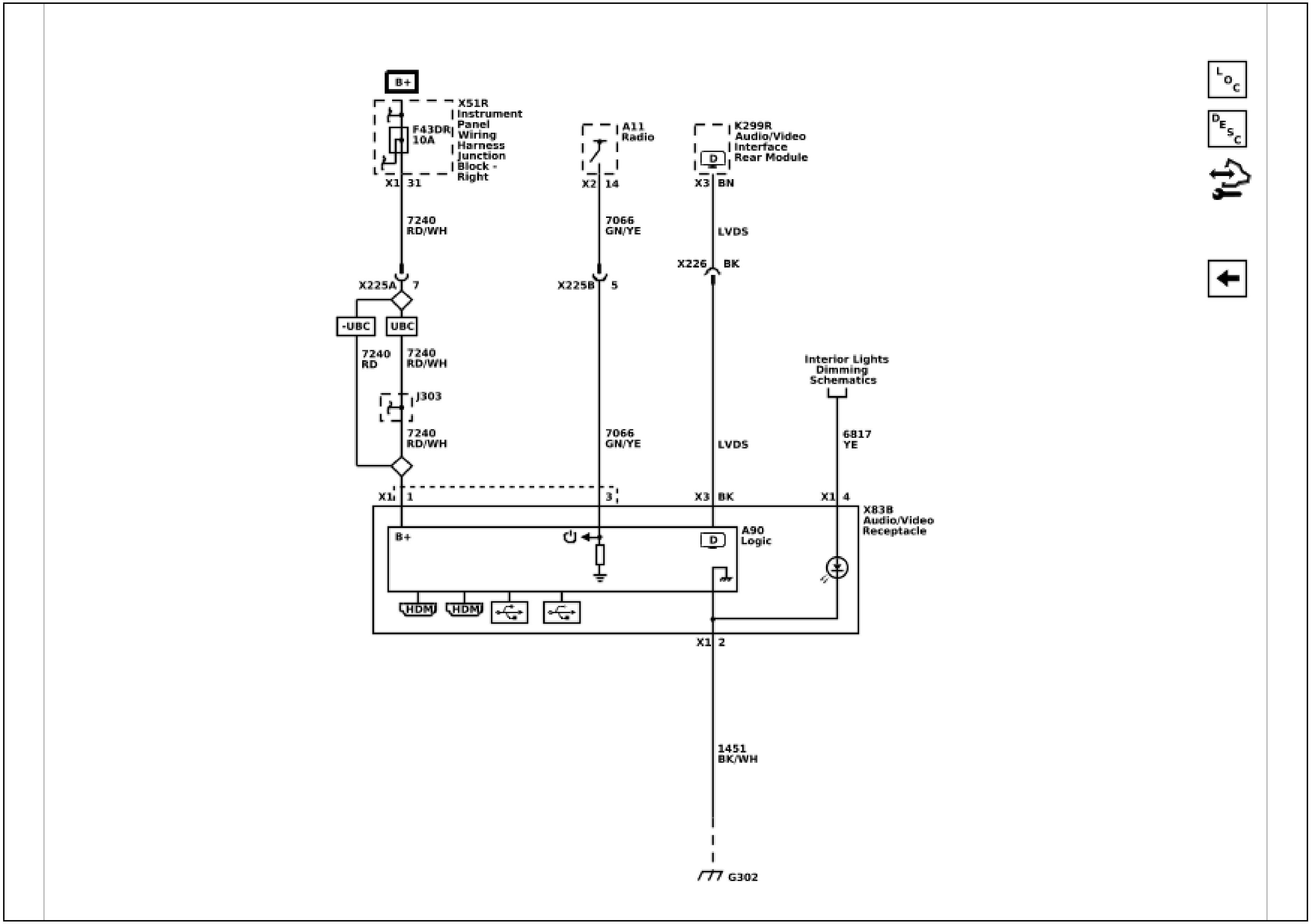
6885509

## Video System Schematics (Rear Video Displays (UW9))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F43DR 10A
X1 26
3640 RD/BN
J358
3640 RD/BN
K299R Audio/Video Interface Rear Module
D
X2 GY
X328 12
X333 12
3640 RD/BN
LVDS
LVDS
J305
X329 BK
X344L BK
J307
3640 RD/BN
LVDS
LVDS
3640 RD/BN
1
GY
GY
1
P7 Display
P22E Video Display - Left Front Seat Back
P7 Display
P22F Video Display - Right Front Seat Back
B+
D
A90 Logic
D
B+
A90 Logic
9
9
1451 BK/WH
1451 BK/WH
G302

6885510

## Video System Schematics (Rear Multimedia Receptacle (UW9))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F43DR 10A
X1 31
7240 RD/WH
X225A 7
-UBC
UBC
7240 RD
7240 RD/WH
J303
7240 RD/WH
X1 1
A11 Radio
X2 14
7066 GN/YE
X225B 5
7066 GN/YE
3
K299R Audio/Video Interface Rear Module
D
X3 BN
LVDS
X226 BK
LVDS
X3 BK
Interior Lights Dimming Schematics
6817 YE
X1 4
X83B Audio/Video Receptacle
A90 Logic
B+
D
HDMI
HDMI
X1 2
1451 BK/WH
G302
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DESC

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# Description and Operation

## OnStar Description and Operation

The OnStar® system consists of the following components:

- Telematic Control Module
- OnStar® Three Button Assembly
- Microphones
- Cellular Antenna
- Navigation Antenna
- Back Up Battery

The OnStar® system supports the following capabilities:

- WiFi Support
- TTY (Teletypewriter)
- FOTA (Firmware Over The Air)

This system also interfaces with the factory installed vehicle audio system.

## Telematic Control Module

The OnStar® Telecommunications Platform (TCP) system communicates with various infotainment components via ethernet. The OnStar® TCP uses Global System for Mobile Communication (GSM) to communicate data and voice signals over the national cellular network. The Telematic Control Module (TCM) supports entertainment WiFi Hotspots by providing a connection to the cellular network for internet access. The module is capable of up to 5G LTE speeds and houses 2 technology systems, one to process Global Positioning System (GPS) data, and another for cellular information. The module sends and receives all cellular communications over two cellular antennas and cellular antenna coax cables.

The OnStar® TCP system has two antenna inputs, a primary cellular signal and a combined GPS/secondary cellular signal. OnStar® can receive signals from multiple global navigation satellite systems, including the United States developed GPS and Russian developed Global Navigation Satellite System (GLONASS).

The module also has the capability of activating certain features such as, the horn, remote engine starting, initiating door lock/unlock, or activating the exterior lamps using the serial data circuits. These functions can be commanded by the OnStar® Call Center per a customer request or mobile device app depending on vehicle and customer subscription.

Dedicated circuits are used to connect the TCM to a microphone, the button assembly, and radio. When equipped, the TCM may contain a back up battery (BUB) which is internal to the control module and replaceable through an access cover. The TCM communicates with the rest of the vehicle over the serial data bus and Ethernet.

Power is provided by a dedicated, fused B+ circuit. Ground is provided through the vehicle wiring harness attached to the module. The power mode state is determined by the TCM through serial data messaging.

## OnStar® Three Button Assembly

- The OnStar® button assembly may be part of the rearview mirror, or a separate, stand alone unit. The button assembly is comprised of 3 buttons or 3 capacitive touch buttons and status LED’s or an error indicator. The buttons are defined as follows:
  - The answer/end button, which is black with a white phone icon or a white driver figure seated with voice signals near its face, allows the user to answer and end calls or initiate speech recognition.
  - The blue OnStar® call center button, which displays the OnStar® logo, allows the user to connect to the OnStar® call center.
  - The emergency button, which displays white letters “SOS” with red background, sends a high priority emergency call to the OnStar® call center when pressed.

If the green LED does not illuminate, this may indicate that the customers OnStar® subscription is not active or has expired. Push the blue OnStar® button to connect to an advisor who can then verify the account status.

The TCM supplies 10 volts to the OnStar® button assembly on the keypad supply voltage circuit. When pressed, each button completes a circuit across a resistor allowing a specific voltage to be returned to the TCM on the keypad signal circuit. Depending upon the voltage range returned the TCM is able to identify which button has been pressed.

The OnStar® status LED or error indicator is located near the buttons. The LED is green when the system is ON and operating normally. When any indicator is illuminated and flashing, it is an indication that a call is in progress. When the LED is red, this indicates a system malfunction is present. In the event there is a system malfunction and the OnStar® system is still able to make a call, the LED will flash red during the call.

Each LED or error indicator is controlled by either the TCM over dedicated LED signal circuits or by low speed CAN 5 serial data depending on the inside rearview mirror option. Ground for the LED is provided by the wiring harness attached to the button assembly.

### Secondary OnStar® Controls

Some vehicles may have an additional button that when pushed can engage the OnStar® system. The button may be a symbol of a face with sound waves, or may say MUTE, or be a symbol of a radio speaker with a slash through it.

By engaging the OnStar® system with this feature, the user can interact with the system by use of voice commands. A complete list of these commands is supplied in the information provided to the customer. If the information is not available for reference, at any command prompt the user can say "HELP" and the TCM will return an audible list of available commands.

### Microphones

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the TCM. It is also connected by an analog pass-through circuit to the radio from the TCM.
The secondary microphone is connected directly to the radio.

The primary microphone is used for emergency and OnStar® calls. During normal operating conditions it also provides Bluetooth® calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for Barge-in and Passenger Interference Cancellation during speech recognition and also to enhance the driver side hands free calls. For model year 2018 and beyond the secondary microphone can also be used for front passenger hands free phone calls. Barge-in allows a user to speak over the system prompts. Passenger Interference Cancellation ignores unwanted inputs from cabin noise that is not related to the prompts given by the user.

The front passenger secondary microphone is never used as a direct source for an OnStar® call.
The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar® call requires the microphone to be directly connected to the TCM. During a normal (non-emergency) OnStar® call the TCM receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar® call audio and sends it back to the TCM via the Ethernet connection. During an emergency button call the TCM contacts the OnStar® call center directly and does not send the signal to the radio.

### Cellular and GPS Antennas

The combination antenna will have any of the following antenna elements when equipped with OnStar®:

- Primary cellular element
- Secondary cellular element
- GPS element
- Digital radio element
- AM/FM element

The OnStar® Telematics Communication Platform (TCP) system uses 2 cellular antenna elements to send and receive cellular data, the primary cellular element and the secondary cellular element. The primary cellular signal is carried by a coax cable that connects the antenna directly to the TCM. Details of the secondary cellular signal are further described below.

The GPS antenna element is used to collect the signals of the orbiting GPS satellites. GPS signals are output from the TCM on Ethernet or CAN 5. Other modules on Ethernet may use the GPS latitude, longitude and satellite time data broadcast by the TCM. Using positioning information from the vehicle Ethernet avoids the use of a coaxial signal splitter to pass the analog GPS signal to other modules. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. Also housed within the antenna is circuitry to combine the GPS signal and the secondary cellular signal. The combination GPS/secondary cellular signal is carried by a coax cable that connects directly to the TCM. The cable also provides a path for DC current for powering the antenna.

### Compass Heading

The TCM has a compass feature to calculate vehicle direction which is displayed via the instrument panel cluster or designated display. The compass heading is determined by dead reckoning until the GPS 3rd fix is established. The dead reckoning is accomplished by using the yaw rate sensors and wheel ticks to determine heading changes from a GPS known heading. The GPS 3rd fix heading is determined by the deferential of two locations.

### Bluetooth®

With the OnStar® TCP system, Bluetooth® resides in the radio. Refer to Radio/Audio System Description and Operation for further details.

### Phantom Phone Calls

A customer may report that the OnStar® system is attempting and/or completing phone calls which the operator of the vehicle did not initiate.

It is important to know which type of reported phantom phone call the operator is reporting. Some phone calls of this nature are considered normal and cannot be addressed other than through education, while others may require some remedial action to resolve. When attempting resolve, it is very important to determine under which circumstances the reported Phantom Phone Call resulted.

The following are different scenarios:

- The vehicle may receive an incoming call just like any other phone. Typically the customer will hear the phone ringing in the vehicle. This scenario also includes incoming Bluetooth® calls.
- Because the button assembly and associated wiring feeds voltage back to the OnStar® system based on the amount of voltage drop through each of the buttons, should the return line be partially shorted to voltage, the system could interpret this voltage as a key press. If one of the buttons voltage is simulated, such as the Blue button, the system will make a phone call just as if the button had been pressed by the operator of the vehicle. Refer to the OnStar® Button Malfunction document for diagnostics.
- Internal module fault. Some customers may report a condition where ″Phone Unavailable″ message is heard after the vehicle door is opened or key is cycled. The technician may find a DTC stored in the Telematic Control Module (example: U1500 or B1000). Refer to diagnostics for the DTC making sure to follow any applicable Bulletins or PIs.
- Unwanted Hands free calling activation. A customer may report that the ″Ready!″ or ″OnStar® Ready!″ message is heard while driving. The customer may also advise that this seems to happen mostly while making a turn. In some cases it has been found that the customer is inadvertently pressing the ″push to talk″ button on the steering wheel controls. On rare occasions, other issues in the steering column or Steering Wheel Control system may induce this event.

The majority of reported Phantom Phone Calls can be attributed to accidental button presses or customer induced concern. In some cases an incoming call may be mistaken as a phantom call concern. It is important to verify all aspects of the customer concern in order to properly duplicate and diagnose the condition. If the concern points to normal operation and customer induced concern, please communicate to the customer this condition is a normal operating characteristic of their vehicle.

### Back-up Battery

In some vehicles, the telematics system is equipped with a Back-Up Battery (BUB) installed inside the TCM. This battery is a single-cell lithium-ion rechargeable battery assembly, connected with a short electrical harness, to the circuit board in the module. Contained within this single-cell battery package are a temperature-sensing thermistor, automatic-resetting circuit-overload protection, and a low-pressure vent valve. Nominal voltage of the battery pack is 3.0 - 3.4 volts.

The BUB is only switched into service when the telematics system is in normal On condition, Ignition » On / Vehicle » In Service Mode and main vehicle battery power (B+) at the TCM suddenly becomes near-zero. At this time BUB power is connected to the main circuit board power using solid-state power switching circuits. After initiating BUB for module power, the CAN 5 bus is monitored for a message confirming a collision-event, or near-collision event, has occurred. If a confirmation message is received, the TCM continues to use BUB as the power supply until it is depleted. If a confirmation message is not received within 10 seconds, the BUB power circuits are internally disconnected, preventing inadvertent dis-charge of the battery.

Charging circuitry within the TCM maintains the state of charge. The BUB charging occurs as determined by the module software, primarily based on temperature and state of charge. Battery state of charge is measured by the telematics module circuitry, and remaining energy capacity calculated by the module software. On-board diagnostic tests check for circuit faults, over-temperature conditions, and low-energy capacity. Current DTCs will set for each of these conditions. No component checks are required, and are not recommended, for BUB diagnosis.

## WiFi Support

The TCM supports entertainment WiFi hotspots by providing a connection to the cellular network for internet access. The radio acts as the central WiFi router and connects hardwire Ethernet to the TCM. The TCM completes the connection to the internet through the cellular network. It has the ability to connect up to 7 devices at one time.

## Audio System Interface

When the OnStar® requires audio output, a serial data message is sent to the audio system to mute all radio functions and transmit OnStar® originated audio. The OnStar® audio is transmitted to the vehicle audio system by the Ethernet and CAN 5 circuits.

The audio system will mute and an audible ring will be heard though the speakers if the vehicle receives a call with the radio ON.

On some vehicles, the HVAC blower speed may be reduced when the OnStar® system is active to aid in reducing interior noise. When the system is no longer active, the blower speed will return to its previous setting.

## OnStar® Sleep Cycle

The OnStar® system uses a unique sleep cycle to allow the system to receive cellular calls while the vehicle is OFF and retained accessory power mode has ended. This cycle enables the TCM to perform remote functions, such as door unlock, as commanded over the air by the OnStar® Call Center, and to continue to maintain an acceptable level of battery electrical drain.

The OnStar® system uses 4 states of readiness, depending upon the type of cellular market the vehicle is in when the vehicle is Off:

- High power
- Low power
- Sleep
- Digital standby

The high power state is in effect whenever the vehicle is ON or in PROPULSION MODE, or retained accessory power is enabled, and the OnStar® system is sending or receiving calls or when the system is performing a remote function.

The low power state is in effect when the OnStar® system is idle with the vehicle is Ignition » On / Vehicle » In Service Mode, or with retained accessory power enabled.

The digital standby power state is entered after the vehicle has been shut off and the retained accessory power has timed out while in a digital cellular area. When in digital standby mode, the OnStar® module is able to perform all remote functions as commanded by an OnStar® advisor at any time, for a continuous 120 hours. After 120 hours, the OnStar® module will go into sleep mode until a wake up signal from the vehicle is seen by the TCM. If the OnStar® module loses the digital cellular signal it will revert to analog mode and follow the standard sleep state (9 minutes OFF, 1 minute standby) based on the time of the GPS signals, this will continue until a digital cellular signal is again received.

If the OnStar® system loses battery power while the system is in a standby or sleep mode, the system will remain OFF until battery power is restored and the vehicle is Ignition » On / Vehicle » In Service Mode.

## Features

### OnStar® Personal Calling

The hands free, OnStar® personal calling cellular phone feature is an additional feature of the OnStar® system. This feature is embedded within the TCM; however it must be activated by an OnStar® advisor. OnStar® personal calling operates similar to most hand held cellular phones in that the availability for its usage is based on minutes or units. The customer must have a current OnStar® subscription, as this feature cannot be utilized without it. To use OnStar® personal calling, the customer must also purchase units (minutes) as outlined in the owners guide provided with the OnStar® system. Units begin to deplete, 1 unit is equal to 1 minute, as the customer makes outbound phone calls, answers inbound phone calls, or while connected to the OnStar® virtual advisor. In addition, units may also have an expiration date, depending upon the type of units purchased.

### Turn by Turn Navigation (if equipped)

Turn by Turn Navigation allows the driver to contact OnStar® to obtain directions for driving from a current location to a desired location. The Turn by Turn Navigation system stores your planned route and continually checks your position along that route, when you deviate from the planned route, the system will recognize this and prompt the driver with verbal prompts for how to proceed. .

## Teletypewriter (TTY) Users

OnStar® has the ability to communicate to deaf, hard-of-hearing, or speech-impaired customers while in the vehicle. The available dealer-installed TTY system can provide in-vehicle access to all of the OnStar® services, except Virtual Advisor and OnStar® Turn-by-Turn Navigation.

## Deactivated OnStar® Accounts

In the event a customer has not renewed their OnStar® account after expiration or the account was never activated, OnStar® will make a discrete cellular call to the vehicle to deactivate the OnStar® system. Before taking this action, customers are notified that the OnStar® system in their vehicle will be deactivated unless they elect to renew the account. After the OnStar® account has been deactivated, customers will experience the following:

- The OnStar® status LED will not illuminate.
- The OnStar® system will NOT attempt to connect to the OnStar® Call Center in the event of a collision or if the vehicle's front air bags deploy for any other reason.
- An emergency button press will play a demo message indicating the service has been deactivated.
- An OnStar® Call Center button press will connect the customer with a dedicated sales team who can sell an OnStar® subscription and reactivate the vehicle. Depending on the type of OnStar® hardware in the vehicle, the customer may first hear a demonstration message stating there is no current OnStar® subscription for the vehicle, and directing the customer what to do to activate services.
- OnStar® personal calling will not be available, as this feature requires the customer to have a current OnStar® account. Attempts to use this feature may result in cellular connection failure messages and the inability to connect to the number dialed.

Certain vehicles that have never had an active OnStar® account, or that have been deactivated, may be unable to establish a connection with the OnStar® Call Center. When normal published diagnostic procedures do not indicate a possible cause for the no connect concern, the vehicle may have been deactivated. For deactivated vehicles, a no connect response should be considered normal operation. Further diagnosis and subsequent repair is only necessary should the customer elect to become an active OnStar® subscriber or renew the account subscription.

## OnStar® Cellular, GPS, and Diagnostic Limitations

The proper operation of the OnStar® System is dependent on several elements outside the components integrated into the vehicle. These include the National Cellular Network Infrastructure, the cellular telephone carriers within the network, and the GPS.

The cellular operation of the OnStar® system may be inhibited by factors such as the users range from an analog or digital cellular tower, the state of the cellular carrier’s equipment, and the location where the call is placed. Making an OnStar® key press in areas that lack sufficient cellular coverage or have a temporary equipment failure will result in either the inability of a call to complete with a data transfer or the complete inability to connect to the OnStar® Call Center. The OnStar® system may also experience connection issues if the identification numbers for the module, station identification number, electronic serial number or manufacturers electronic ID, are not recognized by the cellular carriers local signal receiving towers.

The satellites that orbit earth providing the OnStar® system with GPS data have almost no failures associated with them. In the event of a no GPS concern, the failure will likely lie with the inability of the system to gain GPS signals because of its location, i.e. in a parking structure, hardware failure, or being mistaken with an OnStar® call which has reached the Call Center without vehicle data.

During diagnostic testing of the OnStar® system, the technician should ensure the vehicle is located in an area that has a clear unobstructed view of the open sky, and preferably, an area where analog or digital cellular calls have been successfully placed. These areas can be found by successfully making an OnStar® keypress in a known good OnStar® equipped vehicle and confirming success with the OnStar® Call Center advisor. Such places can be used as a permanent reference for future OnStar® testing.

## Mobile Identification Number and Mobile Directory Number

The TCM utilizes 2 numbers for cellular device identification, call routing and connection, a mobile identification number and a mobile directory number. The mobile identification number represents the number used by the cellular carrier for call routing purposes while the mobile directory number represents the number dialed to reach the cellular device.

## Firmware Over The Air

The Firmware Over The Air feature was designed to reflash software remotely. Remote reflash is an in-vehicle feature that enables the installation of a software package to update the infotainment system without requiring service test equipment to be physically connected to the vehicle. Remote reflash will utilize a long range or short range connection from the host module to a remote IT system. There must be an active OnStar® account to receive Over The Air programming or updates. To verify the status of the account perform a blue button press and verify the account is active and connects with data and location. Customers need to accept the OnStar® terms and conditions, and must have an active OnStar® account to receive any Over The Air programming or updates.

**Note:** A data plan is not required to receive Over The Air programming or updates. Also the programming or updates do not consume a customers available data.

**Note:** Cold temperatures can cause the update to fail. Warm vehicle’s interior to fix this issue.

**Note:** Low battery can cause the update to fail. Have battery charged before running update.

**Note:** Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

## Video Entertainment System Description and Operation

The video entertainment system may consist of a rear seat infotainment system only or both a front passenger infotainment and rear seat infotainment system. Below is the Description and Operation for each system.

## Rear Seat Infotainment System

The rear seat infotainment system includes:

- Audio/Video Interface Rear Module
- 2 seat headrest display screens
- Rear Consumer Port (RCP)
- Bluetooth headphones (ICE SUV’s only)

### System Operation

Display 1 (drivers seat back) and Display 2 (passenger seat back) are connected to the Audio/Video Interface Rear Module via a LVDS cable. The Audio/Video Interface Rear Module drives the displays and Bluetooth audio, and is connected to the radiovia CAN and Ethernet for other in-vehicle functions. The Rear Consumer Port is connected to the Audio/Video Interface Rear Module via a LVDS cable.

To turn on the displays touch anywhere on the screen and the Home screen will be displayed. The screen is designed with a left side navigation panel, which provides a Power button, a Bluetooth headphones setting button, a Home screen button and a setting button to access the system settings. The Power button allows allows the user to turn OFF the screen.

The front users can control the Rear Seat Infotainment through the entertainment hub app. The front user has the ability to see the overview of the content played on the rear screens, turn the rear screen On/Off, mute the rear screens, play and pause, lock the rear screen, sharescreen to another screen, listen in and close source. Within the entertainment hub settings menu, the front users can restart the rear screens if they encounter any issues without losing a factory reset on the rear screens to clear all personal data, log in credentials, and bookmark pages and return the rear screens to factory settings. For additional features refer to the Owner Manual. The rear seat infotainment system does not support navigation.

**Note:** For Apps and Streaming Services to work with the rear seat infotainment system a specific data plan must be purchased.

### Display Screens

The rear screens are located at the back of the front seats. Both left and right screens are connected to the Audio/Video Interface Rear Module via LVDS cables.

The rear displays utilize a 12.6 inch fixed 16x9 aspect ratio touch screen LCD with 1920x1080 pixel resolution.

Each rear display can select a video source independently or utilize the share screen option to have the same source displayed on both screens.

### Rear Consumer Port

The Rear Consumer Port (RCP) is connected to the Audio/Video Interface Rear Module via LVDS cables.

The RCP has the following inputs availableq:

- HDMI 1
- HDMI 2

### HDMI

The HDMI input allows an HDMI cable to be connected from an auxiliary device such as a video streaming device or a game system. For certain HDMI devices that support USB charging, the USB ports can be used as a power source.

### USB

Equipped with 2 rear USB-C charge only ports.

**Headphones**
The rear seat infotainment system supports Bluetooth headphones, only 1 headphone can be active per rear screen.

To pair a Bluetooth headphone to one of the rear sceens:

- Touch the Headphone icon from the desired rear screen Home page.
- Select Connect Headphones
- Select Add Headphones
- Make sure the Bluetooth headphone is in pairing mode. Following the device instructions to enter the pairing mode.

Once recognized by the system, the headphone is displayed on the list of available headphones.

Select the appropriate headphone from the list. Once connected, touch OK at the Pairing Successful pop-up.

For additional features refer to the Owner Manual. The RSI system does not support Navigation.

**Note:** For Apps and Streaming Services to work with the Rear Seat Infotainment system a specific Data Plan must be purchased.

## Front Passenger Infotainment

The Front Passenger Infotainment system includes:

- Audio/Video Interface Module
- 1 display screen
- Front Consumer Port

**System Operation**
The front display is connected to the Audio/Video Interface Module via LVDS cable. The Audio/Video Interface Module drives the display, front consumer port, and Bluetooth audio but is also connected to the radio via CAN and Ethernet for other in-vehicle functions. The Front Consumer Port is connected to the Audio/Video Interface Module via LVDS cable. The FPI system is controlled by touchscreen input or “Quick Remote” which can be accessed via vehicle WiFi connection.

To turn on the FPI screen, touch anywhere on the screen and the home screen will be displayed. The screen is designed with a left side navigation panel, which provides a power button, a Bluetooth headphones settings button, a home screen button and a setting button to access the FPI system settings. The Power button allows the user to turn OFF the screen.

The screen has a “Switchable Privacy” feature that is automatically turned on when the vehicle is in motion. This is used to ensure the driver is not distracted by the video content being displayed on the FPI screen while the vehicle is in motion.

The front users can control the Front Passenger Infotainment through the entertainment hub app. The front user has the ability to see the overview of the content played on FPI screen, turn the front screen On/Off, mute the front screen, play and pause, lock the front screen, enable listen in and close source. Within the entertainment hub settings menu, the front user can restart the front screen if they encounter any issues, without losing any personal data, such as log in credentials or bookmarked pages. The user can also perform a factory reset on the front screen to clear all personal data, log in credentials, and bookmarked pages and return the Front screen to factory settings.

For additional features refer to the Owner Manual. The FPI system does not support Navigation.

**Note:** For Apps and Streaming Services to work with the Rear Seat Infotainment system a specific Data Plan must be purchased.

**Display Screen**
The front display utilize a 20 inch fixed amorphous screen, touch screen LCD with 3760x1088 pixel resolution and switchable privacy feature.

**Quick Remote Experience**
The quick remote feature allows the customers to utilize their mobile phones as a soft remote to control the FPI screen and the contents within it without touching the screen.

- To use the quick remote, users must first connect their mobile phone to the vehicles WiFi hot spot.
- Once the mobile phone is connected to the vehicles WiFi hot spot, use the mobile phone camera app to scan the QR code on the FPI screen.
- This 2–step process will help connect the users phone to the FPI system and sue as a quick remote
- Within the quick remote, users can seek forward/backward, play/pause, and use trackpad for the mouse curser.
- Users may also use the bookmark feature, tabs feature, and URL search bar feature when using the quick remote in browser app.
- If the user disconnects from the quick remote, simply follow the first 2 steps to reconnect to the FPI quick remote.

**Front Consumer Port**
The Front Consumer Port (FCP) is connected to the Audio/Video Interface Module via LVDS cable.

The Front Consumer Port has HDMI 1 as an available input.

**USB**
Equipped with 1 front USB-C charge only port.

**HDMI**
The HDMI input allows an HDMI cable to be connected from an auxiliary device such as a video streaming device or video game system. For certain HDMI devices that support USB charging, the USB ports can be used as a power source.

**Headphones**
The FPI system supports bought in Bluetooth headphones, only 1 headphone can be active at one time.

To pair a Bluetooth headphone to the front screen:

- Touch the Headphone icon from the front screen Home page.
- Select Connect Headphones
- Select Add Headphones
- Make sure the Bluetooth headphone is in pairing mode. Following the device instructions to enter the pairing mode.

Once recognized by the system, the headphone is displayed on the list of available headphones.

Select the appropriate headphone from the list. Once connected, touch OK at the Pairing Successful pop-up.

For additional features refer to the Owner Manual.

## Radio/Audio System Description and Operation

The entertainment system on this vehicle may have several different configurations available to it. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to *RPO Code List 0-2*.

Each item in the list below represents topics covered in detail below.

- Demo Mode
- Data Communications
- Remote Radio Receiver
- Speaker Operation
- Antenna System
- Radio Reception
- Active Noise Cancellation/Auto Volume Control (If equipped)
- Microphones
- Bluetooth ® (if equipped)
- WiFi
- Back Office Registration
- Applications (if equipped)
- Speech Recognition
- Navigation System Components and Features (if equipped)
- Locations Services
- Valet Mode
- Teen Driver
- Theft Deterrent
- Audio Amplifier (if equipped)
- Infotainment Controls and Display
- Steering Wheel Controls (If equipped)
- USB port
- OnStar ®
- OTA (Over The Air) Programming
- GAS (Google Automotive Services) if equipped
- Compass Data
- Media Disc Player (if equipped)
- Digital Rearview Camera (if equipped)
- Immersive Audio – Dolby Atmos (if equipped)

## Demo Mode

The radio on new unsold vehicles received at the dealer will be in Demo Mode. In Demo Mode a phone will only stay paired for the current key cycle and lose pairing to the radio after the vehicle shuts down and restarted after 10 min. Additional operational characteristics of Demo Mode include no retention of the following:

- Stored favorites
- Last station tuned
- Bluetooth synced devices
- Volume level
- Last app or screen view
- Audio/equalizer settings

**Note:** If a device was originally paired while in Demo Mode, a similar condition could occur that randomly continues to drop Bluetooth pairing after exiting Demo Mode. If the vehicle is not in Demo Mode, but it is believed the device was originally paired while in Demo Mode, then delete the device from the radio, delete the radio from the device, and perform the pairing process again.

Loss of functionality on the above items may be due to the design intent of the vehicle while in Demo Mode, no correction is needed for these conditions. This is the normal operating characteristic of the Demo Mode of the vehicle. Once the vehicle is sold, select the option labeled “Not a Demo Vehicle” to exit Demo Mode.

## Data Communications

The infotainment system communicates with other devices on multiple serial data networks during operation.

### Ethernet AVB

At the core of the infotainment system is the Radio Ethernet AVB (Audio Video Bridging) switch, which communicates directly to each contributing Infotainment module terminator. The Ethernet harness consists of twisted pair wires from point to point. Each module on the Ethernet infotainment system sends/receives data at 100 megabit per second (Mbps) to/from a specified port at the Radio. Some system configurations support a 1 Gigabit per second (Gbps) connection at the Radio to/from the TCP (Telematics) module. The Radio/Ethernet will also be used to program USB S/W update files to the modules connected to the Ethernet ports. Some of the data services performed over Ethernet AVB include: Chime, Service Programming via Over-The-Air updates, OnStar Turn-by-Turn directions and all other OnStar data services.

### Local Interconnect Network (LIN)

The Local Interconnect Network (LIN) Bus is a single wire communication system. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality.

The Remote Radio Receiver, Information Display, Infotainment Controls and the Multifunction (tunnel) Controls all communicate on the LIN bus.

### Controller Area Network (CAN)

The Radio will communicate with other modules and systems in the vehicle via CAN and CAN5. Diagnostic Trouble Codes will be read on CAN/CAN5 to diagnose Ethernet, LIN and system faults. CAN will also be used for programming calibrations using Tech Line Connect (TLC)/SPS. CAN takes the place of GMLAN on Global-B architecture systems. CAN5 is a sub-system of the entire CAN network on a vehicle and is the specific network that connects the Infotainment modules on the vehicle.

For additional information refer to *Data Link Communications Description and Operation 9-32*

### Automotive Audio Bus (A2B)

The Automotive Audio Bus (A2B) uses a radio and one or more nodes. It is a private, digital, and high speed serial bus. The system contains a master (radio) and one or more nodes connected by an unshielded twisted pair (UTP) wiring harness. Diagnostic Trouble Codes (DTCs) are set within the master node for all errors in the system, if the bus is up and communicating. The system operates on full duplex, where communication is possible over a single wire if the other wire is damaged or open. The network is daisy chained. A and B ports are isolated by the A2B transceiver. The A2B bus line doesn’t require any terminator. The last device is configured as end node by the A2B master processor during the network discovery process.

## Remote Radio Receiver

### Overview

The Radio is the Ethernet master. The radio also communicates with other components and systems within the vehicle via CAN/CAN5 and LIN. The remote radio receiver communicates with the info display module via the LIN bus for control information, touch communications and dimming level. Digital video data is sent to the display through a dedicated video cable.

The Radio receiver contains internal antennas for Bluetooth ® and WiFi. The Radio also has an external WiFi antenna (on applicable systems) that is used to receive local WiFi signals at increased distances. This is mainly used to support Over-the-Air updates.The Radio must be mounted properly to obtain proper wireless signals and GPS position. The remote radio receiver is responsible for receiving all broadcast audio bands. Broadcast signals from AM, FM, XM and DAB bands are transmitted to the radio via the vehicle antenna systems. The remote radio receiver is also responsible for the following: Video for the infotainment display, Bluetooth ®, USB, memory card reader, and speech recognition functions.

The Radio has phone projection capabilities that can transmits information directly to the vehicle infotainment system through Bluetooth or a USB connection. Downloadable applications will be available based on distracted driver safety requirements.

### Radio Power

The radio receives battery power and ground from the vehicle harness.

The radio does not use a discrete ignition feed circuit for power moding. The power mode master provides the system power mode to the radio via serial data messages. The power mode master determines the system power mode by processing power mode information from ignition switch inputs. Serial data power modes supported by the radio are OFF, ACCESSORY, RUN, and CRANK REQUEST.

The radio can be turned ON with the ignition OFF. After 10 minutes of inactivity the radio will power down. If any setting (e.g. changing the station) or volume has been changed or if the radio has been powered OFF then back ON the 10 minute timer will reset from that point.

### Radio Audio Outputs

When not equipped with an amplifier, the radio outputs all audio signals to the speakers via the vehicle wiring harness.

When equipped with an amplifier, the radio outputs all audio signals digitally over Ethernet.

## Speaker Operation

Speakers turn electrical energy into mechanical energy to move air, using a permanent magnet and an electromagnet. The electromagnet is energized when the radio or amplifier (if equipped) delivers current to the voice coil on the speaker. The voice coil will form a north and south pole that will cause the voice coil and the speaker cone to move in relation to the permanent magnet. The current delivered to the speaker is rapidly changing alternating current (A/C). This causes the speaker cone to move in two directions producing sound.

## Antenna System

### Multi-Band Antenna

The multi-band antenna is located on the roof of the vehicle. This type of antenna may be used with the AM/FM radio, but is primarily for cellular, GPS signals, and XM, if the vehicle has these features. Keep this antenna clear of snow and ice for clear reception. If the vehicle has a sunroof, the performance of the system may be affected if the sunroof is open. Loading items onto the roof of the vehicle can interfere with the performance of the system, ensure the multi-band antenna is not obstructed.

### Diversity Antenna

The diversity antenna system can use up to 2 antenna amplifiers and an AM/FM element that is part of the rear end spoiler assembly or applied as appliqués to the rear glass. With 2 antennas the right antenna 1 receives both AM and FM signals, while the left antenna 2 may receive FM and DAB signals only. The antenna amplifier receives the signals from the rear end spoiler antenna element or from the glass antenna element. Each antenna amplifier is connected to the radio by a coaxial cable.

The radio antenna amplifier is enabled when the radio is turned on. The radio provides battery voltage to the antenna amplifier using the center conductor of the antenna coaxial cable. When a 12 V signal is seen by the amplifier on the center conductor of the antenna coax, the received signals are amplified.

With a 2 antenna amplifier system when the AM band is selected on the radio, the antenna 1 amplifier connects the AM antenna to the radio. When the FM band is selected, both antenna amplifiers provide FM signals to the radio. The radio switches between the two FM antennas, monitoring the signal strength and combines the signals to create one stronger signal.

### Global Positioning System (GPS) Antenna

The global positioning system (GPS) antenna is part of the multi-band antenna located on the roof of the vehicle. The GPS antenna is used to collect the signals of the orbiting GPS satellites. Within the antenna is housed a low noise amplifier that allows for a more broad and precise reception of this data. The GPS antenna amplifier is powered through the coaxial cable.

The GPS antenna is connected to the telematics communication interface control module via a coax cable. The GPS signal is sent to the navigation radio via an Ethernet harness.

### External WiFi Antenna

On some system configurations, an external WiFi antenna is connected to the radio to support longer range reception, compared to the internal Wifi antenna. Over-the-air updates is the main feature supported by this antenna. Data transfers used for consumer media will also be supported by this antenna when connected to a local network. The antenna is connected to the radio via coaxial cable.

## Radio Reception

### AM/FM Radio Signal

The radio signal is sent from a broadcast station and is then received by an antenna. The strength of the signal received depends on the following:

- The power output (wattage) of the broadcasting station
- The location of the vehicle (or receiver) relative to the broadcast tower.
- Height of the broadcast antenna
- Height of the receiving antenna
- Obstacles between the tower and the receiver
- Atmospheric conditions
- What band (AM or FM) the station is broadcasting
- Type of antenna and the ground plane

### Sirius XM (SXM) Digital Radio Receiver (If equipped)

A service fee is required in order to receive the XM service.

The XM satellite receiver is integrated into the radio. XM satellite radio provides digital radio reception. The XM signal is broadcast from two satellites and, where necessary, terrestrial repeaters. The high power satellites allow the antenna to receive the XM signal even when foliage and other partial obstructions block the antennas view of the satellite. Terrestrial repeaters are used in dense urban areas. These repeaters will receive the satellite signal and re-broadcast them at much higher power levels in order to ensure reception in areas with densely packed tall buildings. Even with repeaters the signal can be compromised resulting in loss of XM.

**SiriusXM 360L**
SiriusXM with 360L interface has enhanced in-vehicle listening experience for subscribers. The experience now offers more categories and system learned recommendations toward discovering more personalized content.

To use the full SiriusXM 360L program, including streaming content and listening recommendations, OnStar Connected Access is required. Connected vehicle services vary by model and require a complete working electrical system, cell reception, and GPS signal. An active OnStar connected plan is required, if the customer declines OnStar Terms and Conditions the following message can be displayed: Connection Unavailable, Please call OnStar Agent.

Reference the SiriusXM user guide for use and subscription information.

**SiriusXM Tune Start**
SiriusXM Tune Start is a feature that begins playing the current song from the beginning when you tune to a SiriusXM music channel in the stored Favorites. This feature can be enabled/disabled through the radio Settings menu.

When equipped, Tune Start works with most SiriusXM music channels when the channel has been saved as a Favorite in the radio. The SiriusXM app in the radio also has a list of Favorites. Saving a SiriusXM music channel as a Favorite automatically saves it in the hidden SiriusXM Favorites list. If a SiriusXM music channel is not working in Tune Start ensure the channel exists in the SiriusXM Favorites list. SiriusXM Favorites can be found in the SiriusXM Settings menu under Listener Options. Note that SiriusXM channels stored by default in new vehicles are not stored in the SiriusXM Favorites list. These channels would need to be stored as Favorites by the user for them to appear in the Sirius XM Favorites list. The radio may require a sleep cycle before Tune Start will begin to function on newly saved Favorites. Tune Start will only begin to record SiriusXM Favorites with the Ignition On, so some buffering time is required before Tune Start can function after the vehicle is started.

Tune Start is a SiriusXM feature. Reference the SiriusXM user guide, or contact SiriusXM for use and subscription information.

**High Definition (HD) Radio (If equipped with RPO U2L)**
HD Radio delivers subscription free local broadcasting in a digital format which may include song title, artist name, album art, weather, traffic data, etc., on AM/FM bands. Up to four stations could be available on a single frequency for e.g. if radio station is 96.9 FM, the HD enabled radio would have additional broadcasts on 96.9 HD1, HD2, HD3 and HD4. The digital technology allows for clear reception quality and additional information.

## Active Noise Cancellation/Auto Volume Control (If equipped)

Active Noise Cancellation (or sometimes referred to as Auto Volume Control) may have several different configurations. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to RPO Code List 0-2.

The main components of the Active Noise Cancellation system are:

- Microphones in the vehicle headliner. Use schematics to determine the number of microphones in each vehicle.
- An engine speed (RPM) signal from the engine control module to the amplifier/active noise cancellation module/radio.
- Active Noise Cancellation electronics and software integrated into the audio amplifier/active noise cancellation module/radio.
- The vehicle speaker system, connected to the amplifier/active noise cancellation module/radio, to output the desired cancellation frequencies.

The Active Noise Cancellation system is operational under the following conditions:

- The amplifier/active noise cancellation module/ radio has passed all self diagnostic checks.
- All doors are closed.
- Battery voltage is between 9.5 V and 16 V.
- The vehicle cabin temperature is less than 140°F (60°C).
- For internal combustion engines- Engine speed is between 550 and 3000 RPM

The Active Noise Cancellation/Auto Volume Control system is a method used to reduce the perception of certain undesirable sounds generated by the engine into the vehicle cabin. The system uses microphone and engine speed signals, software integrated into the amplifier/active noise cancellation module/radio, and the vehicle speakers to determine and generate the correct frequencies needed to achieve the desired reduction.

The microphones are located in the headliner to monitor noise/sounds in the vehicle cabin, and are directly connected to the amplifier/active noise cancellation module/radio. For internal combustion engines the amplifier/active noise cancellation module/radio also receives an engine speed (RPM) signal from the engine control module. The amplifier/active noise cancellation module/radio processes these inputs to determine the frequency of the undesirable sound. The amplifier/active noise cancellation module/radio then calculates the appropriate cancellation frequency and outputs a cancellation signal (audio tone) to the vehicle speakers to reduce the perception of undesirable sounds by the vehicle occupants so the vehicle cabin appears quieter and without vibration.

## Microphones

There are two different microphone systems depending on the vehicle. The first system is the traditional analog two wire discrete circuits wired directly to the OnStar module or the radio depending on options. The second system uses microphone arrays and amplifier referred to as nodes that operate in tandem. The system typically uses six circuits also utilizing the two wire discrete analog circuits along with input and output of the Automotive Audio Bus (A2B) Serial Data 1 digital circuits.

### First Microphone System

This system utilizes two hands free audio microphones, the primary microphone on the driver side and a secondary/reference microphone for the front passenger side. The primary microphone is connected directly to the Telematics Control Module. It is also connected by an analog pass-through circuit to the radio from the Telematics Control Module. Without OnStar the primary microphone is connected directly to the radio. The secondary microphone is always connected directly to the radio.

The primary microphone is used for emergency and OnStar calls. During normal operating conditions it also provides Bluetooth calls and speech recognition to the radio. The secondary microphone is used as a reference for the primary microphone for Barge-in and Passenger Interference Cancellation during speech recognition and also to enhance the driver side hands free calls. The secondary microphone can also be used for front passenger hands free phone calls. Barge-in allows a user to speak over the system prompts. Passenger Interference Cancellation ignores unwanted inputs from cabin noise that is not related to the prompts given by the user.

The front passenger secondary microphone is never used as a direct source for an OnStar call. The second microphone input modifies the primary microphone input to reduce background noise and other interference. An OnStar call requires the microphone to be directly connected to the Telematics Control Module. During a normal (non-emergency) OnStar call the Telematics Control Module receives an audio signal from the primary microphone and sends the signal to the radio via the Ethernet connection. The radio processes the OnStar call audio and sends it back to the Telematics Control Module via the Ethernet connection. During an emergency button call the Telematics Control Module contacts the OnStar call center directly and does not send the signal to the radio.

### Second Microphone System

The microphone array system uses a master which is the radio and any number of microphones or amplifiers referred to as nodes. The nodes are connected to the master via the Automotive Audio Bus (A2B) Serial Data 1 circuits. The microphone array system also utilizes the traditional 2 wire analog discrete signal circuits wired to the OnStar module or the radio. These analog circuits are only used as a backup for emergency OnStar calls if the A2B 1 is down. The primary microphone uses a digital signal operating on the A2B serial data 1 circuits. The nodes will have a + and – A2B 1 input and a + and – A2B 1 output, except for the end node which only has a + and – A2B 1 input.

## Bluetooth ® (If equipped)

Bluetooth ® wireless technology is a short-range communications technology intended to replace the cables connecting portable and/or fixed devices while maintaining high levels of security. The operating range of the signal is approximately 30 feet.

The available features and functions are determined by the type of device and the software within the devices being used. For a feature or function to operate, it must be supported in both devices.

The first connection between devices is established through a process called pairing. In order to pair two devices, a password (passkey) has to be exchanged between the two devices. One device will generate the password, the other device accepts the password to complete the process. Once the devices are paired, future connections between the devices will occur automatically when the devices are on and within range of each other.

The Bluetooth ® hardware is internal to the Remote Radio Receiver. The antenna is internal to the Remote Radio Receiver. The Remote Radio Receiver supports streaming of data (music, voice, information) from cellular phones and other mobile devices that support those features. The Remote Radio Receiver is also capable of interfacing with cellular phones for hands-free features.

- The device must be paired to the system to use the available Bluetooth ® feature(s). The pairing process must only be performed once for each device, unless that device's information is deleted.
- Depending on model year up to 10 devices can be paired, refer to owners manual for details.
- Streaming Audio allows playing music from the mobile device wirelessly. Music stored on the mobile device can be viewed and controlled from the display.
- To stream audio from a mobile device, the device must be unlocked, and any additional applications should be closed.

Refer to the owners manual, supplements, and the device manufacturers information for pairing instructions.

### WiFi

The WiFi hardware is internal to the Remote Radio Receiver. The WiFi or WLAN antenna is called the Wireless Communication Antenna which is connected to the Remote Radio Receiver. WiFi expands the abilities of the vehicle as described below:

- Connect to home WiFi to update software.
- When used with OnStar 4G LTE HotSpot service, it provides internet access to devices in the vehicle when connected to the HotSpot. This requires the purchase of OnStar WiFi data plan.
- Enables in-vehicle networking between passengers' devices, like home WiFi network.
- Allows remote access to external connected device application data for vehicle internet application use.

### Back Office Registration

The Radio must be registered with the GM Back Office in order to receive downloaded information such as approved applications, module software updates, weather and traffic information for current location. The vehicle must have a Cellular or WiFi connection to complete the initial registration process. This process will verify the assembly plant factory feed data from the BCM, CGM and Radio serial numbers to the VIN and if the security checks are met, then the user must complete the registration process by entering email and required personal information. The registration status can be verified through the Radio "Setting – About selection.

When any of these secured ECU's are replaced, a new serial number will be recorded during the service calibration process and appended to the vehicles history data for uninterrupted back office connection.

If the Radio is replaced, the user can recover settings/applications by reregistering the email account. During the initial registration process the user will enter an email/password. The user will then be sent a follow up verification email link to setup the account completely. If the complete account setup is not performed the password reset security questions will not be entered, which will prevent reregistering this email account in the future if the password is forgotten. The radio will operate in Demo Mode or as Guest until a user profile has been set up.

### Applications (If equipped)

**Note:** For vehicles equipped with Google Automotive Services (GAS) refer to that section below.

When the system is equipped with Bluetooth ® or WiFI, the system is capable of using applications, commonly referred to as apps.

The term application refers to any piece of software that works on a system (hardware) that is being operated by it's own software. Applications are typically small software programs which uses the hardware to perform a specific task, as opposed to operating the entire system.

- For an application to be used, it must be installed on both the vehicle infotainment system and a compatible mobile device.
- The device must be connected to the system. this may be done wirelessly via Bluetooth ®, WiFi, or via the vehicle USB port. Refer to the device manufacturers information for the proper connection method.
- When the device is connected, the vehicle infotainment system is used to remotely access and control the application on the mobile device.

- The application must work correctly on the device to work with the vehicle infotainment system.
- The user may be required to log-in to the application on the mobile device before using the application from the vehicle controls.
- Using applications will use the device's data plan.
- The device must be unlocked, and any additional applications should be closed.

Refer to the owners manual and supplements for information on mobile devices, control, and operation.

## Speech Recognition

The Speech Recognition feature is implemented only in a Mid/High System Radio- CSM module. There is no Speech Recognition in a Low System. Speech Recognition allows the user to command various features of the radio via voice commands. For addition information refer to the owners manual. For model year 2018 (and forward) Mid/High systems, part of the speech recognition functionality is controlled via off-board cloud connection. A speech icon in the radio allows user to see if an utterance has been received by the off-board cloud. Points-of-interest (POIs) data are also stored off-board. Any disruption in the connection to the cloud will cause a partial loss of functionality for these systems.

For model year 2018 (and forward) there will also be a new speech recognition feature called Barge-in. This allows the user to speak over the voice prompts generated by the system. This feature is turned off by default from the factory and must be enabled by the user.

## Navigation System Components and Features (if equipped)

There navigation system uses the Google Maps app which is a subscription based service (depending on available options).

The navigation system provides the following:

- A global positioning system (GPS) signal, which provides the vehicle location information.
- Map data for navigation and map route guidance.
- Route guidance with verbal prompts to the operator.
- Traffic and weather information for display on the navigation system map (with active subscription, where available).

GPS signals are an output from the telematics communication interface control module on Ethernet. Other modules on Ethernet, such as the radio may use the GPS latitude, longitude and satellite time data broadcast by the telematics communication interface control module.

### Route Guidance

The map will display the route to the selected destination. Voice prompts alert the operator of upcoming events (turns) and arrivals at the destination. The navigation system will automatically recalculate if the route is not followed. The remote radio receiver uses data received from the global positioning system (GPS) satellites, the vehicle speed signal, and serial data information to accurately display the current position of the vehicle.

### Points of Interest

The map database provides point of interest information. Points of interests are locations that are frequently visited. Points of interest can be can be displayed on the map or set as a destination. The following are some of the available Points of interests:

- Gas Station
- Restaurant
- College
- Police Station

## Locations Services

"Locations Services Off" also referred to as Location Masking, is a feature in select 2019 and beyond Infotainment 3 systems that allows customers to enable or disable location services in their vehicle. This allows customers to control what data is being sent from their vehicle, and has important implications for other connected services.

The default setting is "Locations Services On", however, customers can enable or disable Locations Masking in two ways:

1. Press and hold the white button next to the blue OnStar® button in the overhead console.
2. In the Setting menu, select System>Privacy>Location Services>ON or OFF.

- Look for the white LOCATIONS SERVICES icon in the status bar on the Home Screen, next to the clock and outside temperature in the lower right corner of the screen.
- When Locations Services are On, there will be no circle around the icon.
- When the Locations Services are Off, the icon will be circled in red.

Certain functions that require the vehicle's location may not operate properly when Location Services are Off, including:

- Connected Navigation services, if equipped and active, will not work (the system will operate as a non-connected Navigation system).
- Speech recognition may not offer full functionality.

- OnStar advisors will be unable to provide Turn-by-Turn Navigation services.
- Customers may receive error messages in their myChevrolet, myBuick, myGMC, or myCadillac mobile app when trying to use Vehicle Locate.
- Some features of Smart Driver may be inoperable or not work properly, including the score being replaced by dashes.

**Note:** Emergency services, such as Automatic Crash Notification and Stolen Vehicle Assistance, are NOT impacted by Location Masking.

## Valet Mode (If equipped)

Valet Mode is a customer enabled feature of the infotainment system, found in the settings menu, if equipped. The customer creates and inputs a four digit code using the infotainment controls. Confirming the code and selecting LOCK will lock the infotainment system, steering wheel controls and other vehicle features, dependent on vehicle equipment. The vehicle will remain in valet mode until the same four digit code is re-entered.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

## Teen Driver

The teen driver feature puts the vehicle into a mode that can only be unlocked with a valid PIN. It allows various restrictive features for safer driving. Some of the features include Speed Limiter, Speed Warning, Register Key, Report Card, etc. For additional information refer to owners manual.

In the event that the four digit code is forgotten, it can be reset with the scan tool under BCM.

## Theft Deterrent

The radio theft deterrent system is intended to disable or limit radio functionality if incorrect vehicle information is received by the radio. The radio disables functionality if the VIN information received by the radio does not match the VIN information that has been learned by the radio. The radio receives this information via serial data. A possible cause of incorrect VIN info could be the radio was originally installed in another vehicle.

The radio has the following theft operating modes as part of the theft deterrent system:

- Normal Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data matches the learned VIN sequence. In this mode the radio has full functionality.
- No VIN Mode: The radio has not received or learned a correct VIN sequence. In this mode the radio has limited functionality.
- Theft Detected Mode: The radio has learned a correct VIN sequence and the VIN information received via serial data does NOT match the learned VIN sequence. In this mode the radio may be disabled or have limited functionality. The radio display will indicate that theft protection is active.

## Audio Amplifier (If equipped)

### Amplifier Interface

A fused battery voltage circuit provides the main amplifier power. The audio amplifier (when equipped) is a participant on the Ethernet bus. The audio amplifier receives audio signals and control information from the Radio. The Amplifier receives battery power and ground from the vehicle harness.

### Amplifier Operation

The purpose of the amplifier is to increase the power of a voltage or current signal. The output signal of an amplifier may consist of the same frequencies as the input signal or it may consist of only a portion of the frequencies as in the case of a subwoofer or midrange speaker. The audio amplifier amplifies the signal and sends it to the appropriate speakers.

Each of the audio output channel circuits (+) and (−), at the audio amplifier have a DC bias voltage that is approximately one half of the battery voltage. When using a DMM, each of the audio output channel circuits will measure approximately 6.5V DC. The audio being played on the system is produced by a varying AC voltage that is centered around the DC bias voltage on the same circuit. The AC voltage is what causes the speaker cone to move and produce sound. Both the DC bias voltage and the AC voltage signals are needed for the audio system to properly produce sound.

The audio amplifier is also responsible for operation of active noise cancellation if equipped. Refer to Active Noise Cancellation Description and Operation for more information.

Audio Exterior – Vehicle Exterior Sound (RPO NVS), The Vehicle Exterior Sound system is an audio system designed to produce sound on the exterior of the vehicle. The VES system includes two exterior speakers, one front and one rear and an A2B auxiliary amplifier. The VES system receives audio signals from the radio.

## Infotainment Controls and Display

The infotainment display and controls are a separate component from the radio, combined into an assembly. The assembly contains the control knobs and buttons for all audio and HVAC functions and the information display. The assembly is supplied battery voltage and ground from the vehicle harness.

Control information, touch communications and dimming level for the display are communicated via a Low Speed serial data circuit or LVDS cable to the Radio.

The remote radio receiver sends the display digital video data for on-screen display through a dedicated video cable.

The information display provides a feedback on the touch screen and certain controls.

The controls communicate via a Low Speed serial data circuit or LVDS cable with the remote radio receiver. Messages communicated include the following:

- Wake-up/power state messages
- Diagnostic information
- Button presses/knob rotations
- Commands for the state of indicators
- Back-lighting dimming level

## Steering Wheel Controls (If equipped)

Some audio functions are available using the steering wheel controls. The steering wheel controls duplicate the function of the primary controls available on the radio.

For additional information on steering wheel controls, refer to Steering Wheel Controls Description and Operation.

## USB Port

The USB hub device interfaces directly with the remote radio receiver via a standard USB cable. A Mini type USB connector is used to connect the cable at the USB port and at the remote radio receiver and at the auxiliary input receptacle. Standard USB male to female connections are typically used for connecting USB cables together where an in-line connection is required. An in-line cable connection is typically found between the console and I/P harness.

### USB Port

The USB port allows connectivity to the infotainment system from portable media players or a USB storage device (memory stick/ flash drive). When a device is connected to the USB port, the device can be controlled from the radio controls.

Not all portable media player devices or file types are compatible. Connection to USB HUB devices is not supported.

Refer to the owner’s manual for information on USB devices, control, and operation.

## OnStar ® (If equipped)

When OnStar is activated, a serial data message is sent to the radio that activates default audio settings. The fade will be set to the front, bass and treble are set to the mid range, the outputs are set to mono, when the audio source is OnStar. OnStar takes priority over any other audio source.

For additional OnStar information, refer to OnStar Description and Operation.

## Over The Air Programming

The Over The Air Programming feature was designed to reflash software remotely. Remote reflash is an in-vehicle feature that enables the installation of a software package to update the infotainment system without requiring service test equipment to be physically connected to the vehicle. Remote reflash will utilize a long range or short range connection from the host module to a remote IT system. There must be an active OnStar account to receive Over The Air programming or updates. To verify the status of the account perform a blue button press and verify the account is active and connects with data and location. Customers need to accept the OnStar terms and conditions, and must have an active OnStar account to receive any Over The Air programming or updates.

**Note:** A data plan is not required to receive Over The Air programming or updates. Also the programming or updates do not consume a customers available data.

**Note:** Fleet vehicles must be activated as a Fleet account (not a business account) and require a separate Terms and Conditions agreement to be completed. Please see your fleet administrator for assistance with completing this agreement.

### GAS (Google Assistant Services) if equipped

Some of the GAS features are:

- Maps – Benchmark maps, navigation, traffic and point of interest data and legal speed limit sign information.
- Assistant – Voice assistant cloud services with vehicle integration (e.g., radio, HVAC).
- Play Store – Access to favorite media streaming apps plus first party GM apps.
- Keyguard – similar to a code to unlock your cell phone. When this feature is enabled a customer created lock (pattern, PIN or password) will need to be entered to unlock the radio at every ignition cycle. When the radio is locked SPS diagnostics will be unavailable. To utilize SPS diagnostics when the radio is locked enter the “Guest Mode” feature.

A connectivity package needs to be purchased to have the full experience. Refer to the Owner Manual for further information on Google Automotive Services.

### Compass Data

With the Base Radio the Telematics Control module provides compass and GPS position information on the Info-CAN bus when it is present.

In a Mid / High Radio System configuration without a Telematics Control Module and equipped with GPS, the radio shall provide the GPS and heading information on Info-CAN as shown below.

An external Remote Compass Module (RCM) is required to transmit the heading and position information on Info-CAN if either:

- The Base Radio is present in a system configuration with no Telematics control module.
- The radio variant without GPS is present in a system configuration with no Telematics control module.

### Media Disc Player (if equipped)

The Remote Media Player feature sends information through a USB connection to the Rear Seat Infotainment and outputs digital audio/video to vehicle displays and to the Radio over the Ethernet bus. The Rear Seat Infotainment system also has a USB hub with an auxiliary port for digital media file access.

The media disc player receives battery power and ground from the vehicle harness.

### Digital Rearview Camera (if equipped)

The digital rearview camera is a direct input to the radio via coaxial cable. Camera and image activation are driven by reverse gear signal from the reverse lamp input. This function is used for reverse guidance. For radio systems that manage the camera signal, the system does not have video bypass module, as this functionality is managed onboard the radio.

### Immersive Audio – Dolby Atmos (if equipped)

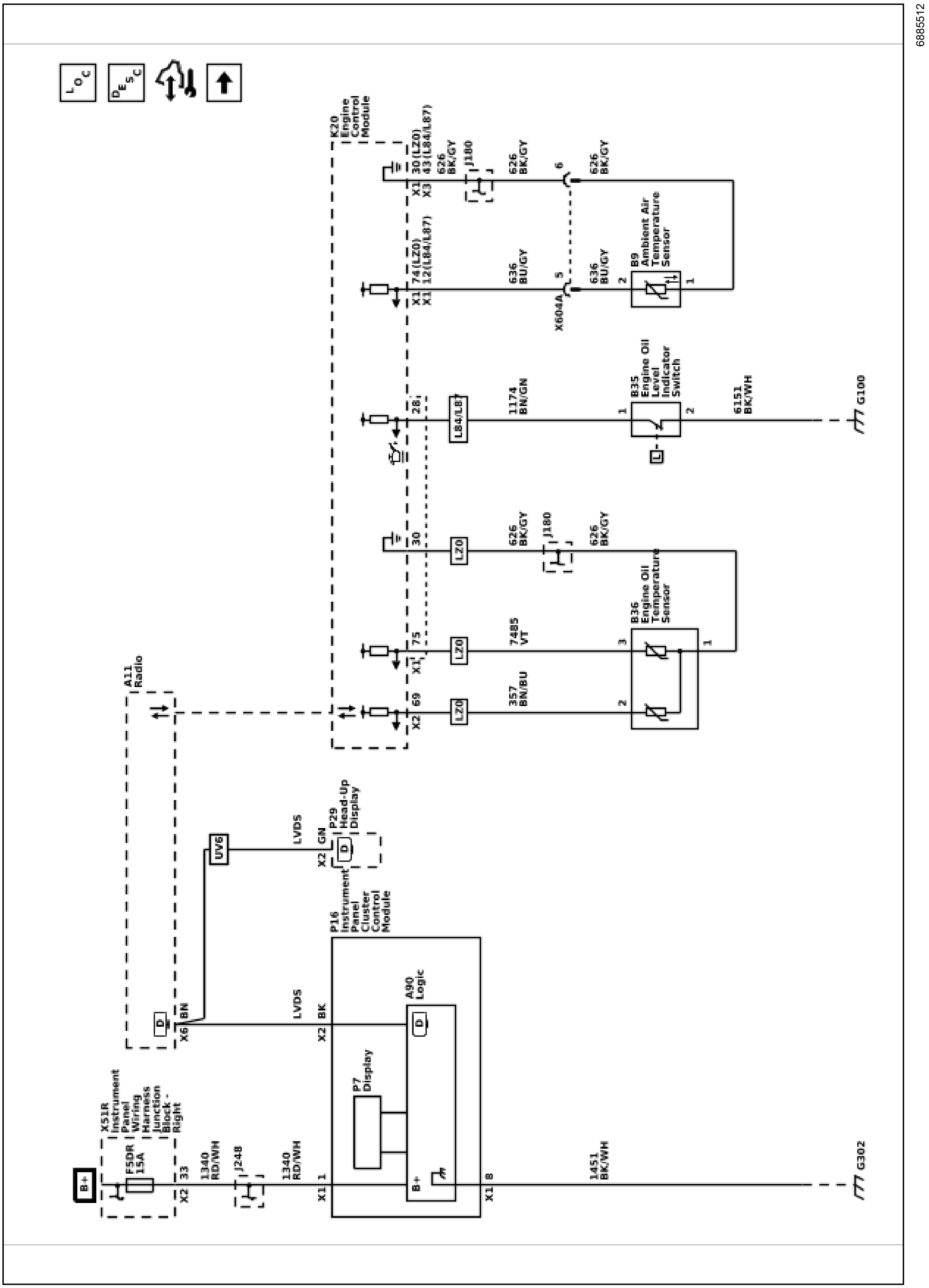
Dolby Atmos is an immersive audio technology that delivers a three-dimensional sounds experience. It makes sound seem to come from all directions, including behind, above and beside. The 7.1.4 system utilizes 7 surround channels, 1 subwoofer, and 4 height channels.

For Dolby Atmos to operate the vehicle may need an OTA update. If an update is available download and install the update first. To confirm Dolby Atmos is installed in the vehicle go to Audio Settings and select Sound. Confirm the Immersive Audio option is present. Verify the vehicle has an active OnStar service plan and a Dolby Atmos compatible streaming service such as TIDAL or Amazon Music Unlimited. The compatible streaming service must be downloaded from the vehicles Google Play Store and not through a cell phone via Bluetooth. In the streaming app look for files with Dolby Atmos labels or badges or search for Dolby Atmos files.

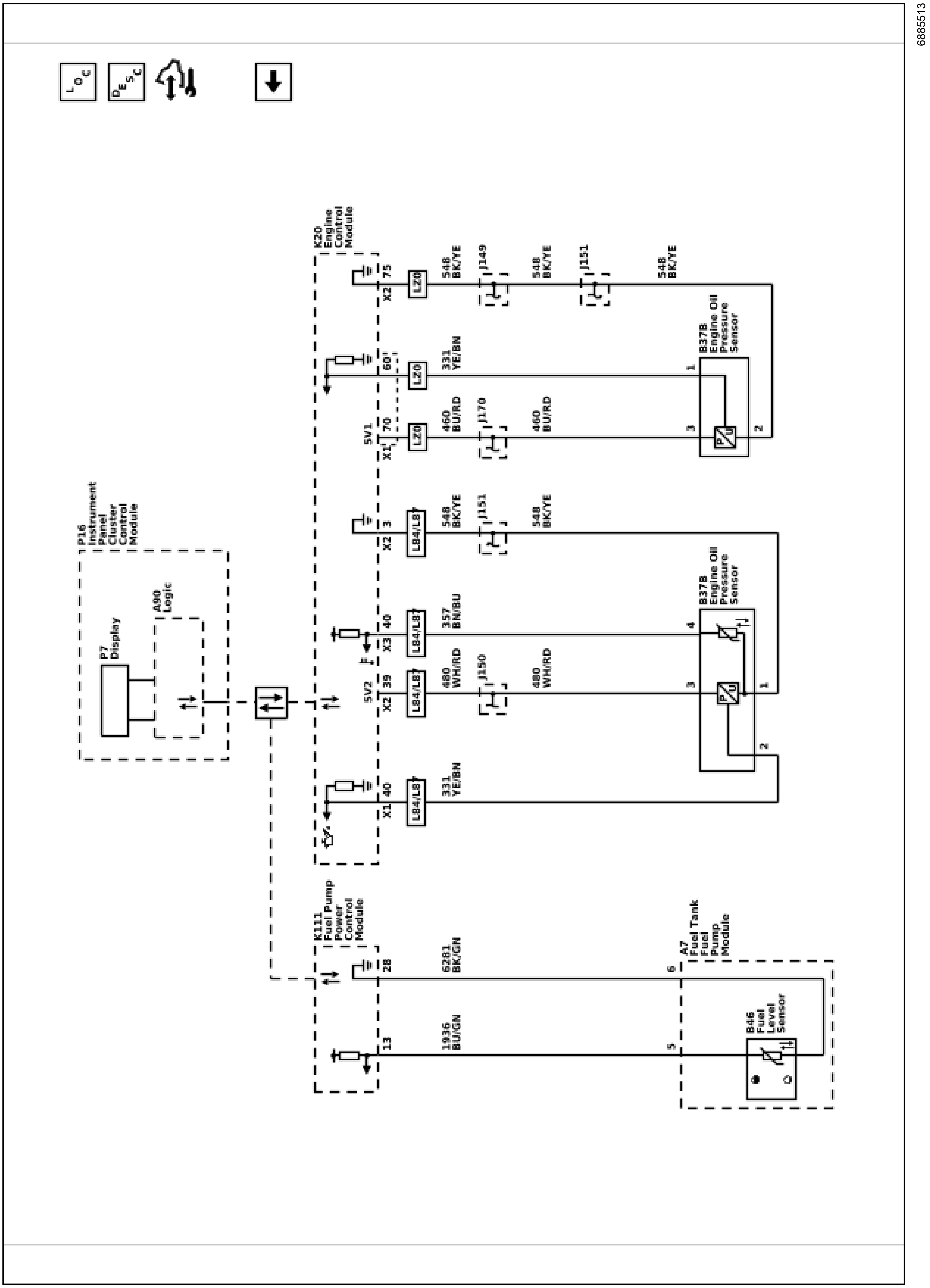
# Displays and Gauges

## Schematic and Routing Diagrams

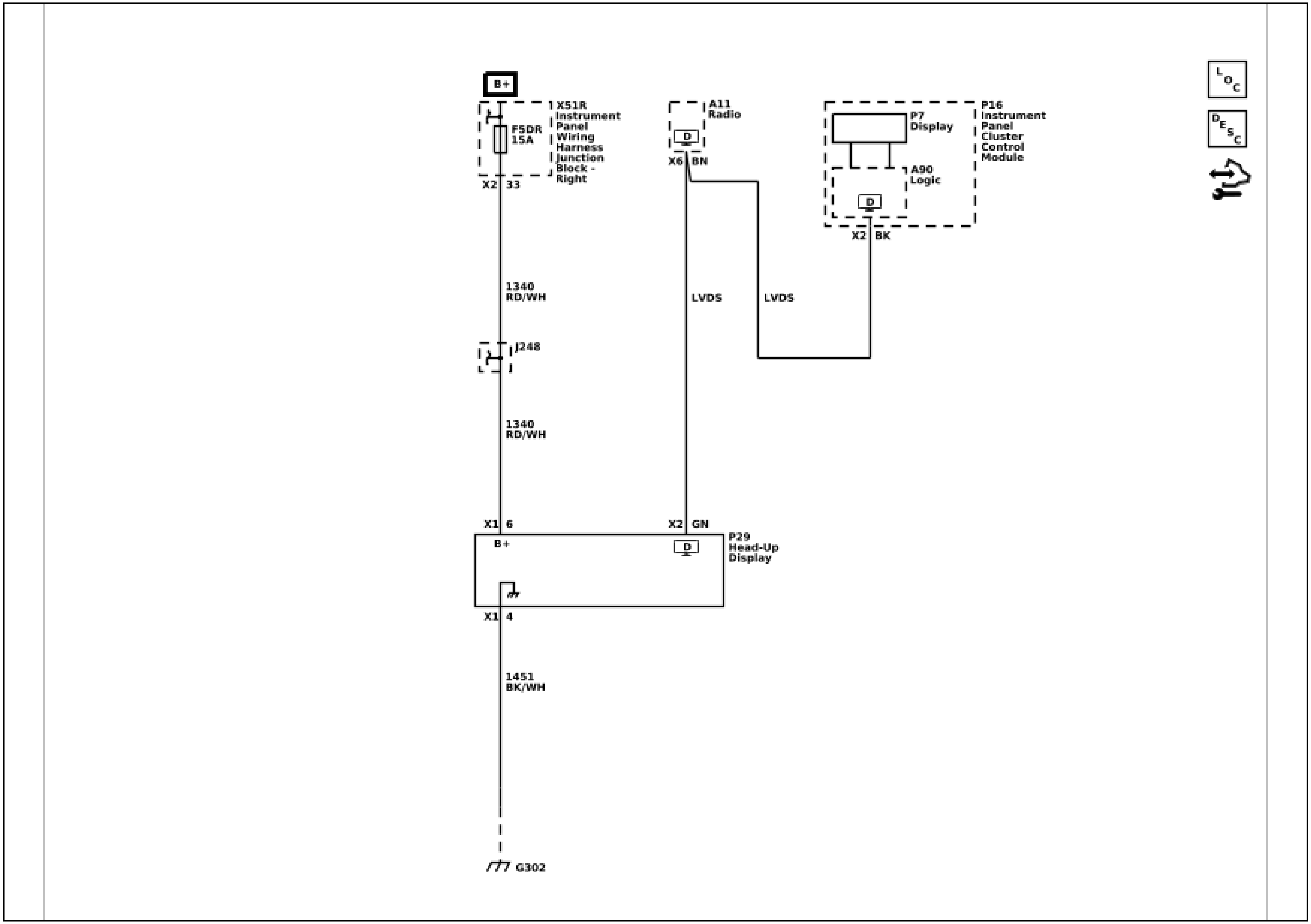
## Instrument Cluster Schematics (Instrument Cluster and Indicators)


6885512
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F5DR 15A
X2 33
1340 RD/WH
J248
1340 RD/WH
X1 1
P16 Instrument Panel Cluster Control Module
B+
P7 Display
A90 Logic
D
X2 BK
LVDS
X1 8
1451 BK/WH
G302
A11 Radio
D
X6 BN
UV6
LVDS
X2 GN
D
P29 Head-Up Display
K20 Engine Control Module
X2 69
LZ0
357 BN/BU
X1 75
LZ0
7485 VT
30
LZ0
626 BK/GY
J180
626 BK/GY
B36 Engine Oil Temperature Sensor
2
3
1
28
L84/L87
1174 BN/GN
1
B35 Engine Oil Level Indicator Switch
2
6151 BK/WH
G100
X1 74 (LZ0)
X1 12 (L84/L87)
636 BU/GY
5
X604A
636 BU/GY
2
B9 Ambient Air Temperature Sensor
1
X1 30 (LZ0)
X3 43 (L84/L87)
626 BK/GY
J180
626 BK/GY
6
626 BK/GY

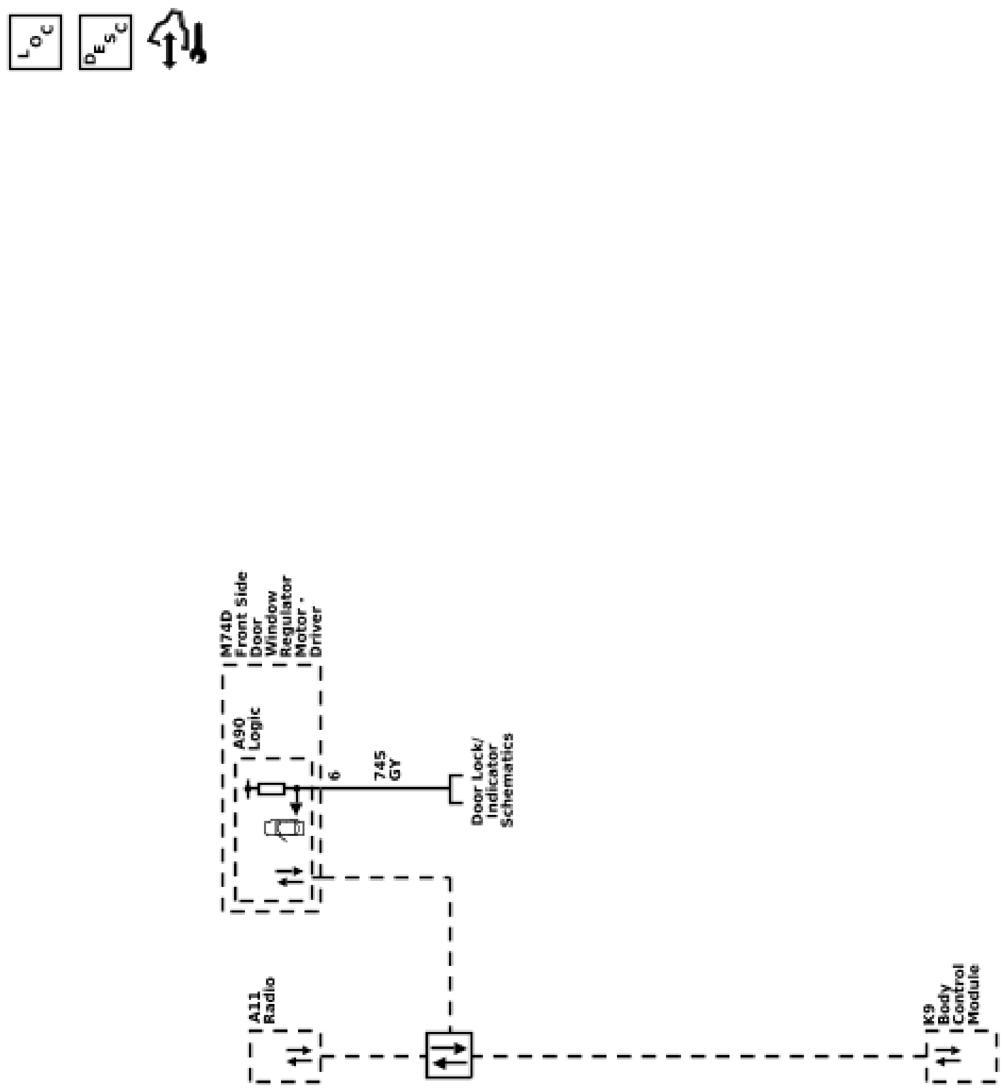
## Instrument Cluster Schematics (Gauges)


6885513
LOC
DESC
K20 Engine Control Module
X2 75
LZ0
548 BK/YE
J149
548 BK/YE
J151
548 BK/YE
60
331 YE/BN
B37B Engine Oil Pressure Sensor
1
5V1
X1 70
460 BU/RD
J170
460 BU/RD
3
2
P16 Instrument Panel Cluster Control Module
X2 3
L84/L87
548 BK/YE
J151
548 BK/YE
A90 Logic
P7 Display
X3 40
357 BN/BU
B37B Engine Oil Pressure Sensor
4
5V2
X2 39
480 WH/RD
J150
480 WH/RD
3
1
2
X1 40
331 YE/BN
K111 Fuel Pump Power Control Module
28
6281 BK/GN
13
1936 BU/GN
A7 Fuel Tank Fuel Pump Module
6
5
B46 Fuel Level Sensor

## Head-Up Display Schematics (Head-Up Display (UV6))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F5DR 15A
X2 33
1340 RD/WH
J248
1340 RD/WH
X1 6
B+
X1 4
1451 BK/WH
G302
A11 Radio
D
X6 BN
LVDS
LVDS
P7 Display
A90 Logic
D
X2 BK
P16 Instrument Panel Cluster Control Module
X2 GN
D
P29 Head-Up Display
LOC
DESC
6885514

## Audible Warnings Schematics (Audible Warnings)


6885515
LOC
DESC
M74D Front Side Door Window Regulator Motor - Driver
A90 Logic
6
745 GY
Door Lock/ Indicator Schematics
A11 Radio
K9 Body Control Module

## Description and Operation

### Audible Warnings Description and Operation

The audible warnings alert the driver of a system concern or a critical vehicle condition. The radio generates the audible warnings through the speakers. The radio receives audible warning requests via the serial data circuit. If the radio receives multiple audible warning requests, the warning with the highest priority sounds first. On vehicles without a radio, a chime module generates the audible warnings and receives audible warning requests via the serial data circuit. Either the radio or the chime module is the chime producer. The following lists the audible warning sounds:

1. Single pulse gong
2. Multiple pulse gong
3. Single pulse beep
4. Multiple pulse beep
5. Click
6. Clack

### Auto Stop Mode

The chime producer activates when the vehicle comes to a stop and the driver or passenger door is opened as requested by the body control module.

### Fasten Safety Belt Warning

The chime producer activates the fasten safety belt audible warning as requested by the body control module (BCM). The BCM sends a serial data message to the chime producer indicating the chime as a multiple gong. The fasten safety belt warning sounds and the fasten safety belt indicator illuminates when the following occurs:

- The ignition switch transitions to ON.
- The inflatable restraint sensing and diagnostic module (SDM) detects that the drivers seat belt is not buckled and the signal is low. The SDM sends a serial data message to the BCM indicating the seat belt status. The instrument cluster receives a serial data message from the BCM indicating the driver seat belt status.

If the seat belt is buckled when the ignition is turned ON, the chime does not sound. If the seat belt is buckled while the chime is sounding, the chime stops. If the seat belt is unbuckled after the initial transition to ON, the chime does not sound.

### Lights On Warning

The chime producer activates the lights on warning as requested by the BCM. The BCM sends a serial data message to the chime producer indicating the chime as a multiple gong. The lights on warning sounds when the following occurs:

- The ignition is OFF.
- The BCM determines that the driver door is open and the signal circuit is low.
- The BCM determines that the headlamp switch is in the park or head position.

### Brake Warning

The chime producer activates the brake audible warning as requested by multiple control modules. The BCM, electronic brake control module or the parking brake control module sends a serial data message to the chime producer indicating the chime as a multiple gong. The brake warning sounds and the BRAKE indicator illuminates when the following occurs:

- The ignition is ON.
- The vehicle speed is greater than 8 km/h (4.9 mph). The instrument cluster receives a serial data message from the Battery Energy Control Module indicating the vehicle speed.
- The BCM determines that the parking brake is engaged and the signal circuit is low.
- The brake fluid is low.

### Door Ajar Warning

The chime producer activates the door ajar audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer indicating the chime frequency of a medium rate and continuous duration. The door ajar warning sounds and the appropriate door ajar indicator illuminates in the driver information center when the following occurs:

- The BCM determines that a door (driver door, passenger door, left rear door, right rear door) is open and the signal circuit is low. The instrument cluster also receives a serial data message from the BCM indicating the door ajar status.
- The vehicle is not in PARK. The BCM receives a serial data message indicating the gear position.

### Object Detection

The chime producer activates the object detection audible warning as requested by the object alarm module. When an object is within the measuring range of the sensor, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the object alarm module. The object alarm module evaluates the received sensor signals. As soon as an object is within the measuring range, the object alarm module sends a message via CAN-Bus to the chime producer in order to give out the acoustic distance signal. The measuring range is between 30–120 cm (11.81–47.24 in). From a distance of 120 cm (47.24 in), the acoustic signal is active. The frequency of the beep sound increases with decreasing distance. From a distance less than 30 cm (11.81 in), the sound becomes continuous.

### Additional Warnings

The following warnings have an associated instrument cluster indicator or driver information center message:

- Turn Signal Indicators – The chime producer activates the audible warning as requested by the BCM. The chime produces two different chimes, one when the turn signal turns off and another when the turn signal turns on.
- Vehicle Overspeed Message – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Fuel Level Low Message – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Oil Pressure Indicator – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Park Assist Fault Clean Rear Bumper Message – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.
- Tire Pressure Low Indicator – The chime producer activates the audible warning as requested by the BCM. The BCM sends a serial data message to the chime producer.

Refer to *Indicator/Warning Message Description and Operation 6-32*.

### Head-Up Display Description and Operation

The head-up display projects an image on the windshield that is viewed from the driver seat. Information that is relevant to what the drive is currently doing is displayed, as well as any safety-critical information as it is happening.

The components of the head-up display are:

- P29 Head-Up Display
- P16 Instrument Panel Cluster Control Module
- A22 Radio Control
- A11 Radio

### Head-Up Display

The P29 Head-Up Display is a slave device to the A11 Radio. The P29 Head-Up Display is powered through battery voltage and ground. It communicates directly with P29 Head-Up Display via another LVDS cable. In some configurations the P16 Instrument Panel Cluster Control Module acts as a pass-through to relay information from the A11 Radio to the P29 Head-Up Display.

The head-up display projects a full color image onto the windshield and is only viewable from the driver seat. The image location and brightness is adjustable using the infotainment screen.

### Head-Up Display Operation

The HUD information can be displayed in various languages. The speedometer reading and other numerical values can be displayed in either English or metric units.

The language selection and the units of measurement are changed through the infotainment screen.

Depending on how the vehicle is equipped, the HUD may display some of the following vehicle information, messages, or alerts:

- Speed
- Incoming Phone Call
- Navigation
- Drivers Assistance Indicators
- Vehicle Messages

Some vehicle messages or alerts displayed in the HUD may be cleared by using the steering wheel controls. Critical alerts may display in the HUD even when it is turned off.

**Speed/Speed Limit Sign**
The head-up display projects the vehicle speed. Additionally, traffic sign recognition information (speed limit) may also be displayed. This can be enabled

through the Driver Display setting on the radio control display

**Navigation**
Displays the speed sign, if enabled, speedometer, select indicators, and Turn-by-Turn Navigation information during an active route.

Turn-by-Turn Navigation alerts shown in the instrument cluster may also display in the HUD.

**Head Up Display Controls**
The HUD Controls are located under the HUD Settings on the infotainment screen. You can adjust brightness, height, and rotation, or turn the HUD on or off. This feature may only be available in P (Park).

**Adaptive Cruise Control Configuration (if equipped)**
The head-up display will project the selected following distance when adaptive cruise control is active.

## Indicator/Warning Message Description and Operation

## Indicator LIGHT ON

Refer to the owner's manual for the descriptions and explanations of all indicator lights.

For diagnosis and repair information related to an indicator light, refer to the System Diagnosis and the Description of Operation that the message relates to.

## Message Displayed

Refer to the owner's manual for descriptions and explanations of all messages displayed.

For diagnosis and repair information related to a displayed message, refer to the System Diagnosis and the Description of Operation that the message relates to.

## Transmission Shift Lever Position Indicator

The transmission shift lever position indicator (if equipped) is located on the center console and indicates the current transmission shift lever position. The transmission shift lever position indicator receives power and ground and is controlled by the Body Control Module (BCM) via serial data. The Transmission Control Module/Powertrain Control Module determines transmission shift lever position based on signals from the transmission internal mode switch and sends the shift lever position information to the BCM via serial data.

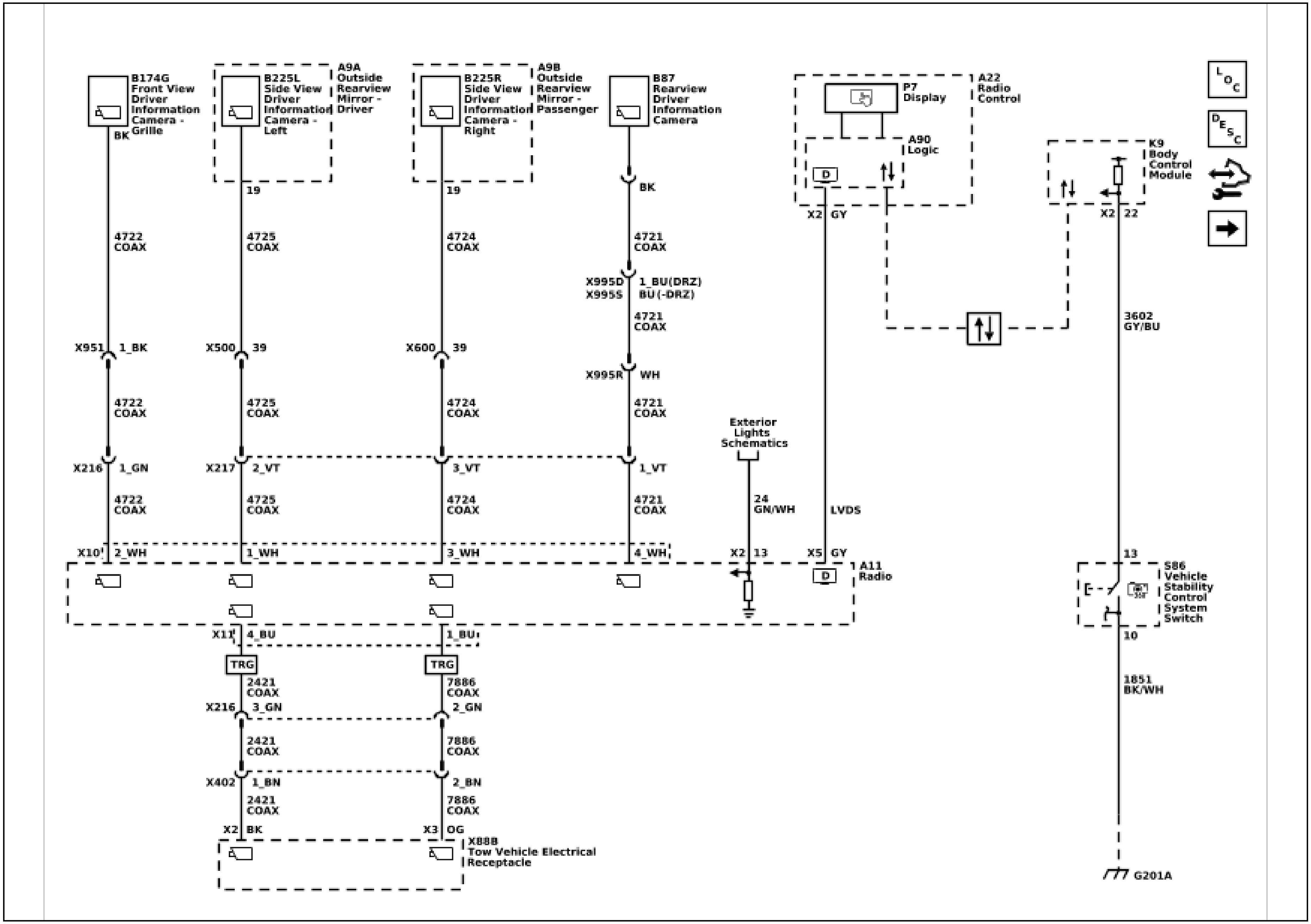
## Instrument Cluster Description and Operation

This vehicle does not contain a traditional instrument cluster to display vehicle information to the driver. Instead, it displays vehicle information on the P53 Diver Information Display. This P53 Diver Information Display is merely a display that is controlled by the A11 Radio. For more information, refer to [Link target (target-id 50968-) not found]

# Image Display Cameras

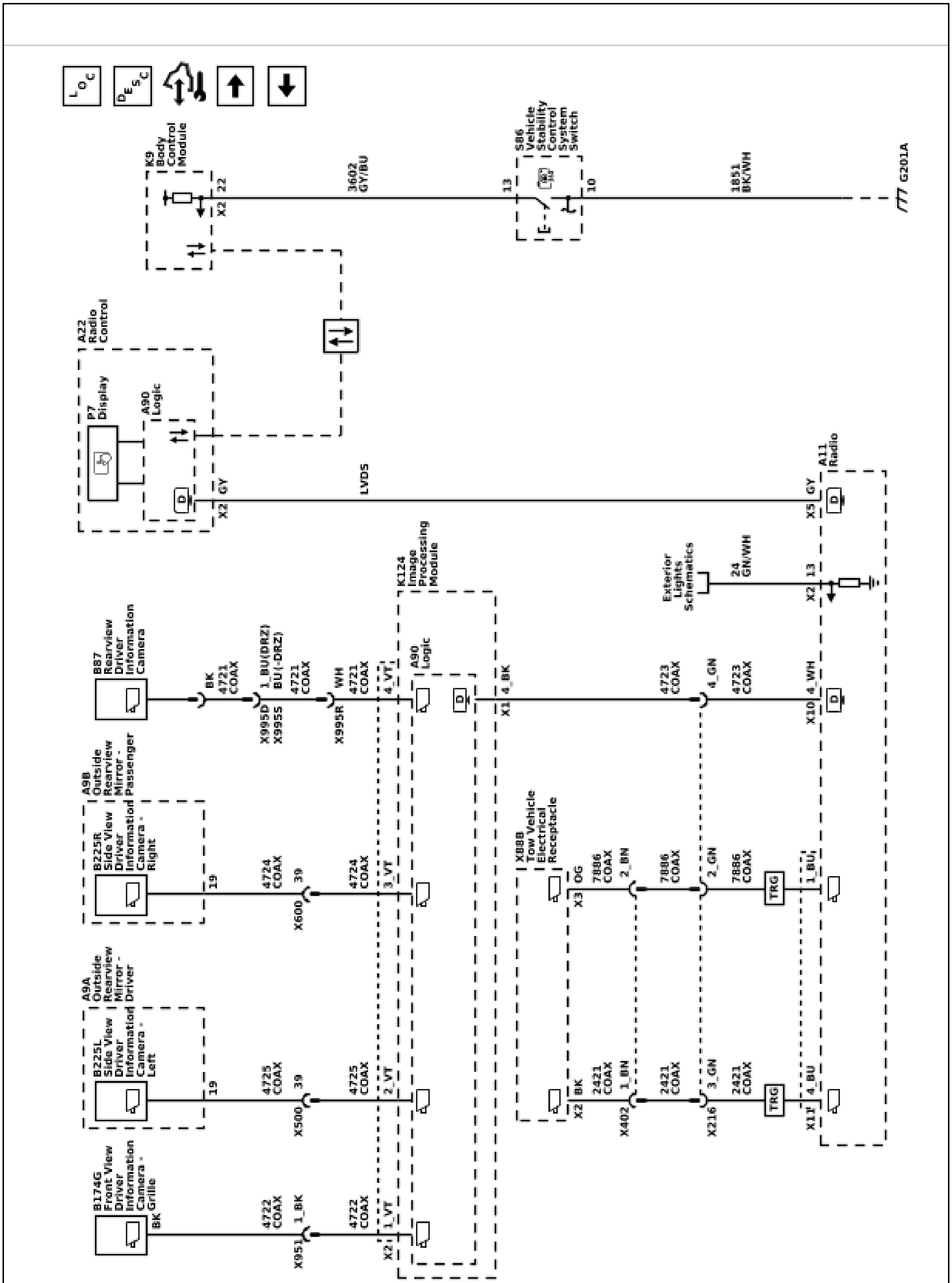
## Schematic and Routing Diagrams

## Image Display Camera Schematics (360 Degree Vision Cameras (UV2 - UKL))


B174G Front View Driver Information Camera - Grille
BK
4722 COAX
X951 1_BK
4722 COAX
X216 1_GN
4722 COAX
X10 2_WH
A9A Outside Rearview Mirror - Driver
B225L Side View Driver Information Camera - Left
19
4725 COAX
X500 39
4725 COAX
X217 2_VT
4725 COAX
1_WH
A9B Outside Rearview Mirror - Passenger
B225R Side View Driver Information Camera - Right
19
4724 COAX
X600 39
4724 COAX
3_VT
4724 COAX
3_WH
B87 Rearview Driver Information Camera
BK
4721 COAX
X995D 1_BU(DRZ)
X995S BU(-DRZ)
4721 COAX
X995R WH
4721 COAX
1_VT
4721 COAX
4_WH
Exterior Lights Schematics
24 GN/WH
X2 13
A22 Radio Control
P7 Display
A90 Logic
D
X2 GY
LVDS
X5 GY
D
A11 Radio
X11 4_BU
1_BU
TRG
2421 COAX
X216 3_GN
2421 COAX
X402 1_BN
2421 COAX
X2 BK
TRG
7886 COAX
2_GN
7886 COAX
2_BN
7886 COAX
X3 OG
X88B Tow Vehicle Electrical Receptacle
K9 Body Control Module
X2 22
3602 GY/BU
13
S86 Vehicle Stability Control System Switch
10
1851 BK/WH
G201A
L O C
D E S C

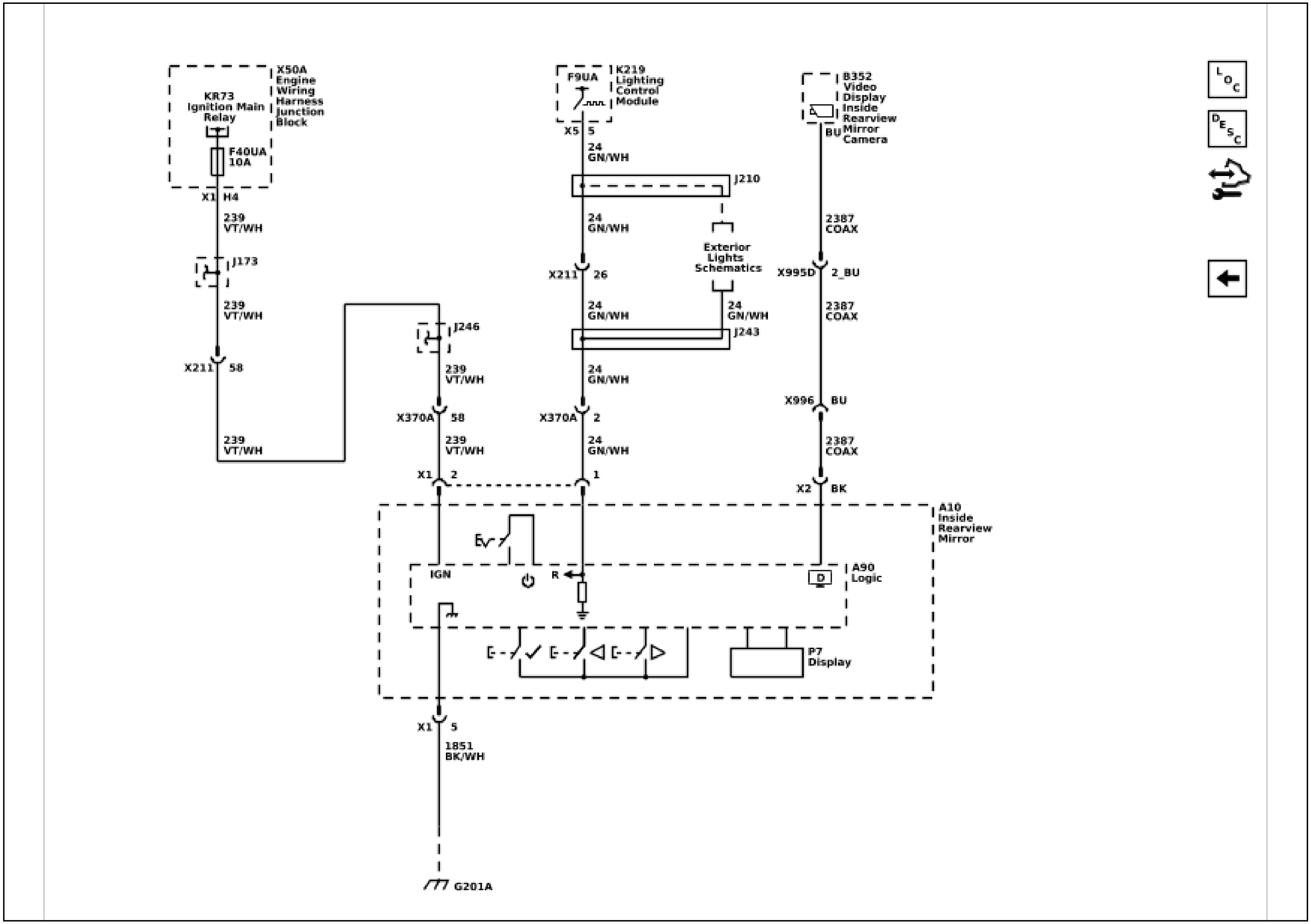
6885516

## Image Display Camera Schematics (360 Degree Vision Cameras (UV2 & UKL))


K9 Body Control Module
X2 22
3602 GY/BU
13
S86 Vehicle Stability Control System Switch
10
1851 BK/WH
G201A
A22 Radio Control
P7 Display
A90 Logic
X2 GY
LVDS
X5 GY
A11 Radio
K124 Image Processing Module
Exterior Lights Schematics
24 GN/WH
X2 13
B87 Rearview Driver Information Camera
BK 4721 COAX
X995D X995S
1_BU(DRZ) BU(-DRZ) 4721 COAX
X995R
WH 4721 COAX
4_VT
X1 4_BK
4723 COAX
4_GN
4723 COAX
X10 4_WH
A9B Outside Rearview Mirror - Passenger
B225R Side View Driver Information Camera - Right
19
4724 COAX
39
X600
4724 COAX
3_VT
X88B Tow Vehicle Electrical Receptacle
X3 OG
7886 COAX
2_BN
7886 COAX
2_GN
7886 COAX
TRG
1_BU
A9A Outside Rearview Mirror - Driver
B225L Side View Driver Information Camera - Left
19
4725 COAX
39
X500
4725 COAX
2_VT
X2 BK
2421 COAX
1_BN
X402
2421 COAX
3_GN
X216
2421 COAX
TRG
X11 4_BU
B174G Front View Driver Information Camera - Grille
BK
4722 COAX
1_BK
X951
4722 COAX
X2 1_VT
D
LOC
DESC

6885517

## Image Display Camera Schematics (Inside Rearview Mirror Camera (DRZ))


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F40UA 10A
X1 H4
239 VT/WH
J173
239 VT/WH
X211 58
239 VT/WH
J246
239 VT/WH
X370A 58
239 VT/WH
X1 2
F9UA
K219 Lighting Control Module
X5 5
24 GN/WH
J210
24 GN/WH
Exterior Lights Schematics
X211 26
24 GN/WH
24 GN/WH
J243
24 GN/WH
X370A 2
24 GN/WH
1
B352 Video Display Inside Rearview Mirror Camera
BU
2387 COAX
X995D 2_BU
2387 COAX
X996 BU
2387 COAX
X2 BK
A10 Inside Rearview Mirror
A90 Logic
IGN
R
D
P7 Display
X1 5
1851 BK/WH
G201A

6885518

## Description and Operation

### Rearview Camera Full Display Mirror Description and Operation

If equipped, full display mirror provides a wider field of view than normally seen from the inside rearview mirror to assist when driving and changing lanes. When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror. The inside rearview camera full display mirror is connected to the outside rearview camera via a shielded coaxial cable.

When the tab under the inside rearview mirror is pulled rearward, a view of the area behind the vehicle displays on the mirror.

Adjust the rearview mirror for a clear view of the area behind the vehicle before turning on full display mirror. Use the three buttons on the bottom of the mirror to adjust the brightness, zoom, and tilt of the display. Make sure the light sensor is not covered when adjusting the brightness.

The inside rearview camera full display mirror may not work properly or display a clear image if:

- It is dark.
- The sun or the beam of headlamps are shining directly into the camera lens.
- Ice, snow, mud, or anything else builds up on the camera lens. Clean the lens, rinse it with water, and wipe it with a soft cloth.

When the mirror detects that the camera is not sending a valid video signal, it “blue screens” with a “no video” decal for 3 seconds, then reverts back to the mirror.

### Rear Vision Camera Description and Operation

### Rear Vision Camera System Operation

The rear vision camera system consists of a video camera located at the rear of the vehicle and the A11 Radio.

When the transmission is placed into REVERSE, a signal is sent to the A11 Radio indicating that camera operation is requested. The rearview camera sends video information to the A11 Radio through a coax cable. The coax cable also provides power from the A11 Radio to the rearview camera.

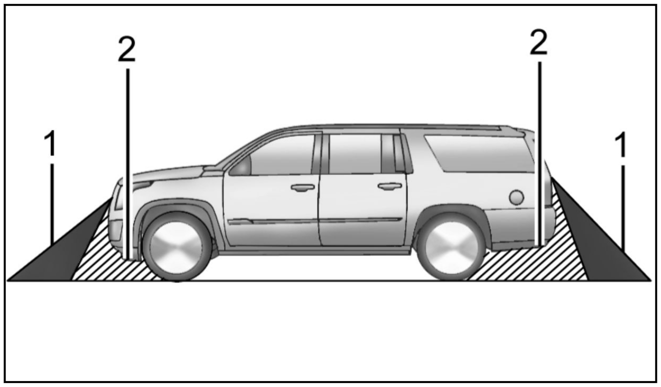
The following conditions may cause a degraded rear vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the rear of the vehicle
- Extreme high temperatures or extreme temperature changes

If a malfunction is detected in the system, SERVICE REAR VISION CAMERA may be displayed on the Info Display Module as an indicator to the customer that a problem exists that requires service.

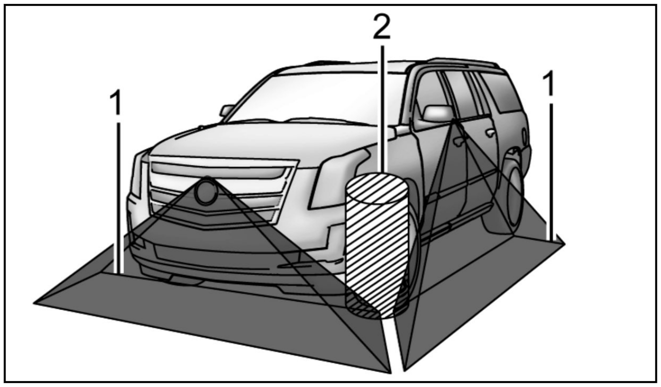
### Surround Vision Camera Description and Operation

***Warning: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding outside mirrors that are out of position may not display surround view correctly. Always check around the vehicle when parking or backing.***



4291164

1. View displayed by the surround vision camera
2. Area not shown



4291749

1. View displayed by the surround vision camera
2. Area not shown

The surround vision camera system consists of the following components:

- K124 Image Processing Module
- A11 Radio

- Infotainment Display
- B87 Rearview Camera
- B174G Frontview Camera – Grille
- B225L Sideview Camera – Left
- B225R Sideview Camera – Right
- X92CF USB 2 Port Receptacle – Floor Console Front

The following conditions may cause a degraded surround vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the vehicle near camera locations
- Extreme high temperatures or extreme temperature changes

Surround Vision displays an overhead view of the area surrounding the vehicle, along with the front or rear camera views in the center stack. The front camera is in the grille or near the front emblem, the side cameras are on the bottom of the outside rearview mirrors, and the rear vision camera is above the license plate.

**Note:** Images from the Sideview Cameras are only displayed when both front doors are properly closed.

### Features of the Surround Vision System

- Rear camera (B87 Rearview Camera) view alongside overhead view is displayed in reverse
- Front camera (B174G Frontview Camera – Grille) view alongside overhead view is displayed after shifting out of reverse to Neutral or Drive
- Will display front view when front park assist object is within trigger range calibration value (30 cm (12 in) in a forward gear
- Image is removed from display when vehicle speed exceeds speed calibration (10kph/6 mph) or button press / screen touch
- If equipped, Surround Vision Camera video recording capability to USB Flash Drive

### System Operation

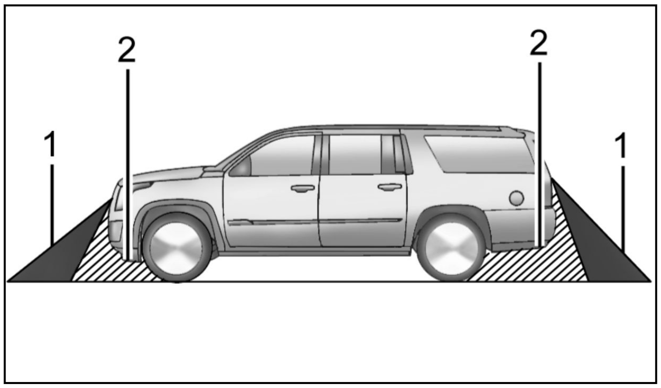
The K124 Image Processing Module is connected to each camera via a shielded coaxial cable. The coaxial cable provides power for the camera and also carries the video image from the cameras to the K124 Image Processing Module for processing. The K124 Image Processing Module will then send the processed image output to infotainment system via another coaxial cable.

The K124 Image Processing Module receives various vehicle information (such as steering wheel angle, object detection, etc) from other sources such as parking assist modules and the Body Control Module via serial data. This information is used to produce the enhanced surround vision system images that include a warning triangle that may display if an object is detected nearby. This triangle changes from amber to red and increases in size as the object gets closer to the vehicle. Also, dynamic guidelines are displayed in Reverse to show the projected path of the vehicle based on steering wheel angle. Due to this use of vehicle information, any faults or DTCs in these related systems can prohibit proper surround vision operation.

If equipped, the surround vision system may have a X92CF USB 2 Port Receptacle – Floor Console Front. The X92CF USB 2 Port Receptacle – Floor Console Front interfaces with the A11 Radio via a USB cable. The A11 Radio uses the USB Flash Drive as a mass storage device.

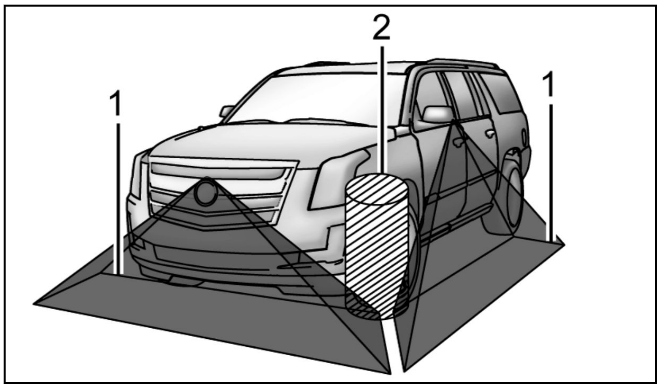
## Surround Vision Camera Description and Operation

***Warning: The Surround Vision cameras have blind spots and will not display all objects near the corners of the vehicle. Folding outside mirrors that are out of position may not display surround view correctly. Always check around the vehicle when parking or backing.***



4291164

1. View displayed by the surround vision camera
2. Area not shown



4291749

1. View displayed by the surround vision camera
2. Area not shown

The surround vision camera system consists of the following components:

- A11 Radio
- Infotainment display
- B87 Rearview Camera
- B174G Frontview Camera – Grille
- B225L Sideview Camera – Left
- B225R Sideview Camera – Right
- X92CF USB 2 Port Receptacle – Floor Console Front

The following conditions may cause a degraded surround vision camera image:

- Ice, snow, or mud has built up on the rear vision camera
- Dark conditions
- Extreme light conditions, such as glare from the sun or the headlights of another vehicle
- Damage to the vehicle near camera locations
- Extreme high temperatures or extreme temperature changes

Surround Vision displays an overhead view of the area surrounding the vehicle, along with the front or rear camera views in the center stack. The front camera is in the grille or near the front emblem, the side cameras are on the bottom of the outside rearview mirrors, and the rear vision camera is above the license plate.

**Note:** Images from the Sideview Cameras are only displayed when both front doors are properly closed.

### Features of the Surround Vision System

- Rear camera (B87 Rearview Camera) view alongside overhead view is displayed in reverse
- Front camera (B174G Frontview Camera – Grille) view alongside overhead view is displayed after shifting out of reverse to Neutral or Drive
- Will display front view when front park assist object is within trigger range calibration value (30 cm (12 in) in a forward gear
- Image is removed from display when vehicle speed exceeds speed calibration (10kph/6 mph) or button press / screen touch
- If equipped, Surround Vision Camera video recording capability to USB Flash Drive

### System Operation

The A11 Radio is connected to each camera via a shielded coaxial cable. The coaxial cable provides power for the camera and also carries the video image from the cameras to the A11 Radio for processing. The A11 Radio will then send the processed image output to infotainment system via another coaxial cable.

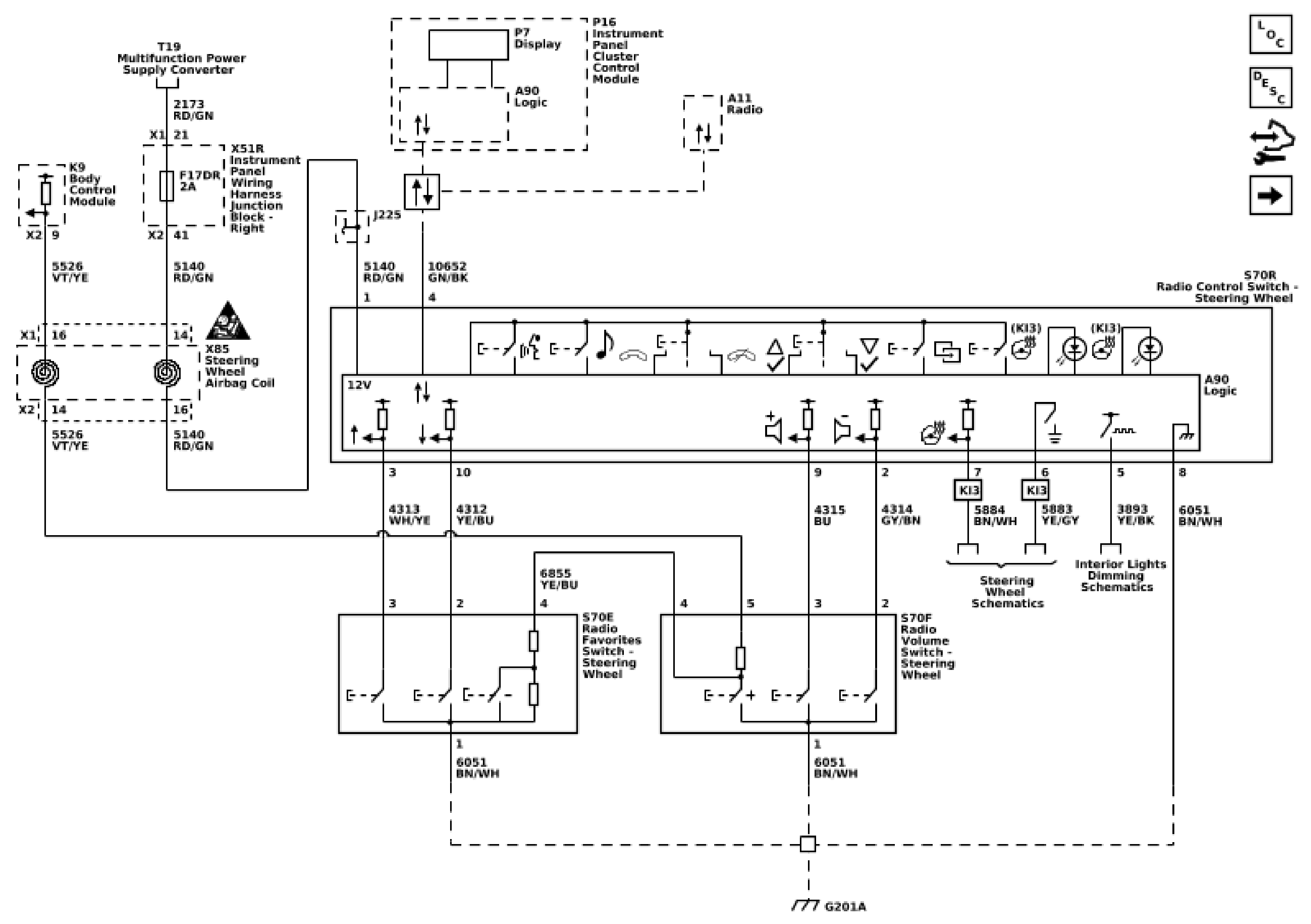
The A11 Radio receives various vehicle information (such as steering wheel angle, object detection, etc) from other sources such as parking assist modules and the Body Control Module via serial data. This information is used to produce the enhanced surround vision system images that include a warning triangle that may display if an object is detected nearby. This triangle changes from amber to red and increases in size as the object gets closer to the vehicle. Also, dynamic guidelines are displayed in Reverse to show the projected path of the vehicle based on steering wheel angle. Due to this use of vehicle information, any faults or DTCs in these related systems can prohibit proper surround vision operation.

If equipped, the surround vision system may have a X92CF USB 2 Port Receptacle – Floor Console Front. The X92CF USB 2 Port Receptacle – Floor Console Front interfaces with the A11 Radio via a USB cable. The A11 Radio uses the USB Flash Drive as a mass storage device.

# Secondary and Configurable Customer Controls

## Schematic and Routing Diagrams

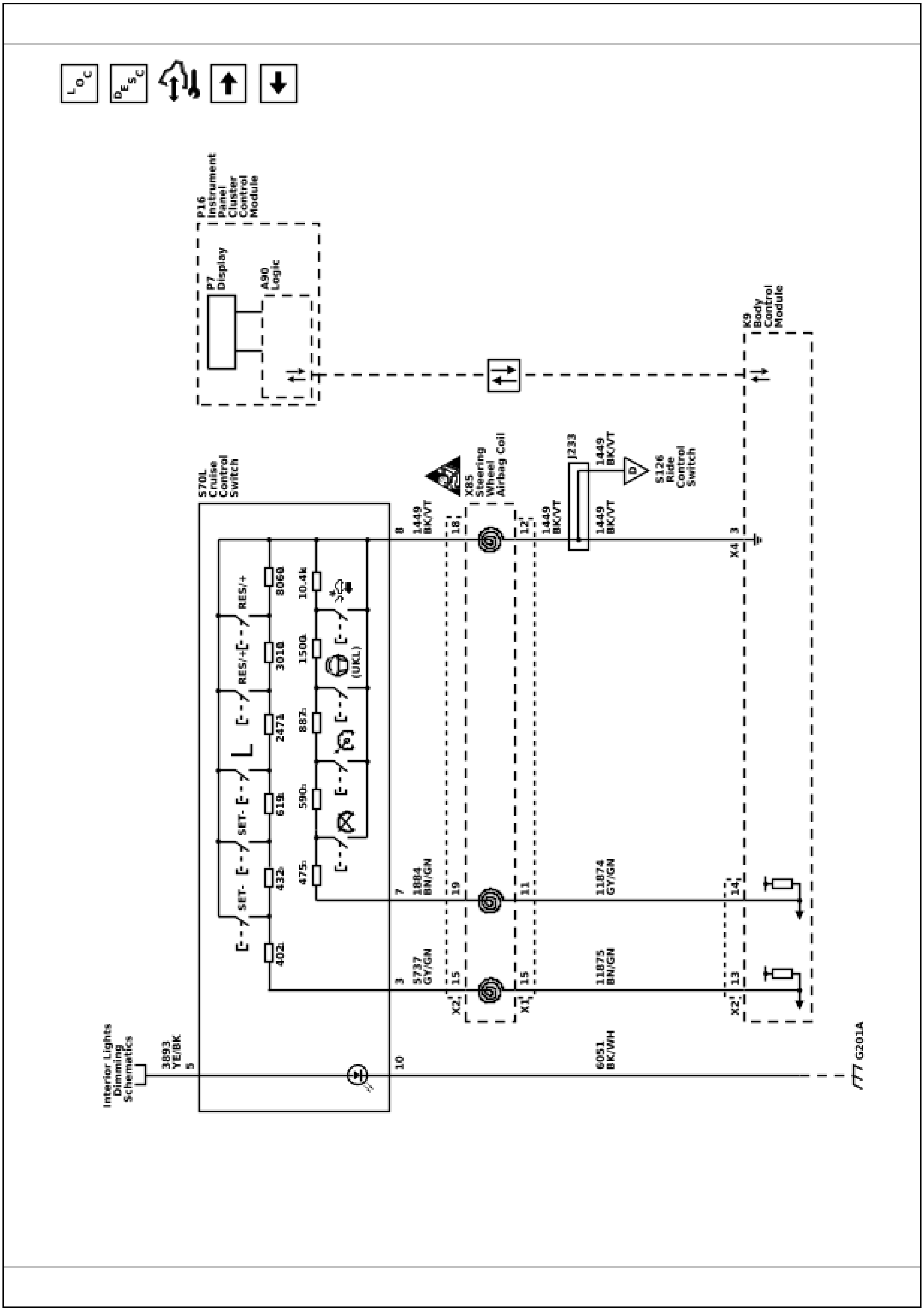
## Steering Wheel Secondary/Configurable Control Schematics (Rear and Right Front Steering Wheel Controls)



T19
Multifunction Power Supply Converter
2173
RD/GN
X1 21
X51R
Instrument Panel Wiring Harness Junction Block - Right
F17DR
2A
X2 41
K9
Body Control Module
X2 9
5526
VT/YE
5140
RD/GN
X1 16
14
X85
Steering Wheel Airbag Coil
X2 14
16
5526
VT/YE
5140
RD/GN
P7
Display
P16
Instrument Panel Cluster Control Module
A90
Logic
A11
Radio
J225
5140
RD/GN
1
10652
GN/BK
4
S70R
Radio Control Switch - Steering Wheel
(KI3)
(KI3)
12V
A90
Logic
3
10
9
2
7
6
5
8
KI3
KI3
4313
WH/YE
4312
YE/BU
4315
BU
4314
GY/BN
5884
BN/WH
5883
YE/GY
3893
YE/BK
6051
BN/WH
Steering Wheel Schematics
Interior Lights Dimming Schematics
6855
YE/BU
3
2
4
S70E
Radio Favorites Switch - Steering Wheel
4
5
3
2
S70F
Radio Volume Switch - Steering Wheel
+
1
6051
BN/WH
1
6051
BN/WH
G201A

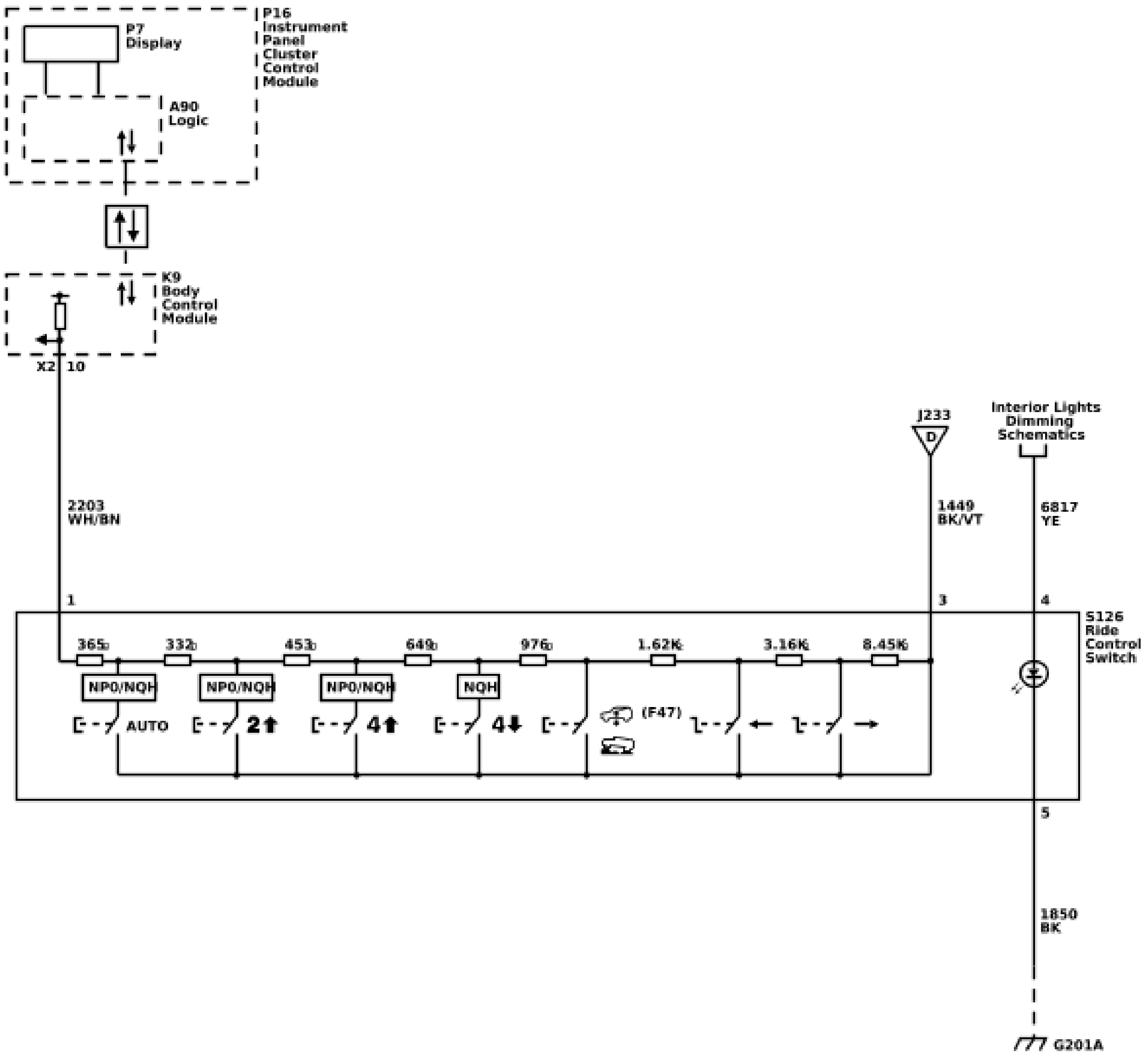
6885519

## Steering Wheel Secondary/Configurable Control Schematics (Left Front Steering Wheel Controls)


L O C
D E S C
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
K9 Body Control Module
S70L Cruise Control Switch
X85 Steering Wheel Airbag Coil
J233
S126 Ride Control Switch
D
8
1449 BK/VT
18
12
1449 BK/VT
1449 BK/VT
1449 BK/VT
3
X4
RES/+
RES/+
SET-
SET-
806Ω
301Ω
247Ω
619Ω
432Ω
402Ω
10.4k
150Ω
88Ω
590Ω
475Ω
(UKL)
7
1884 BN/GN
19
11
11874 GY/GN
14
3
5737 GY/GN
15
15
11875 BN/GN
13
X2
X1
X2
Interior Lights Dimming Schematics
3893 YE/BK
5
10
6051 BK/WH
G201A

6885520

## Steering Wheel Secondary/Configurable Control Schematics (Ride Control Switch)


P16
Instrument Panel Cluster Control Module
P7
Display
A90
Logic
K9
Body Control Module
X2 10
2203
WH/BN
1
J233
D
1449
BK/VT
3
Interior Lights Dimming Schematics
6817
YE
4
S126
Ride Control Switch
365Ω
332Ω
453Ω
649Ω
976Ω
1.62KΩ
3.16KΩ
8.45KΩ
NP0/NQH
NP0/NQH
NP0/NQH
NQH
AUTO
2
4
4
(F47)
5
1850
BK
G201A

6885521

## Description and Operation

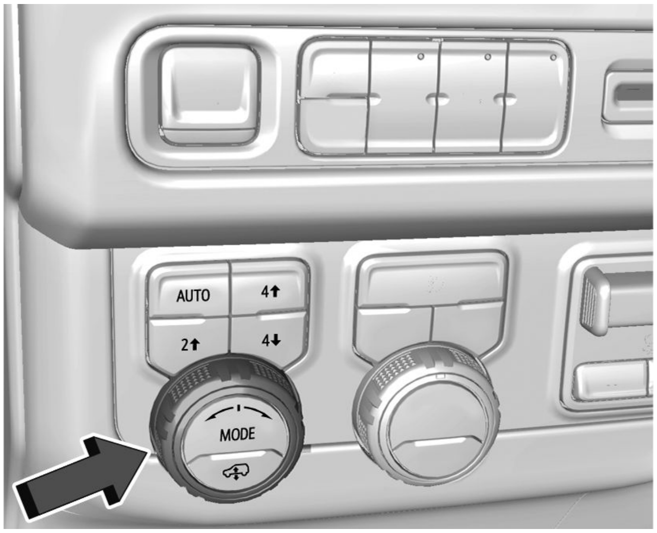
### Drive Mode Description and Operation

Driver Mode Control (DMC) allows the driver to adjust the overall driving experience to better suit preference by adjusting multiple subsystems simultaneously. Drive mode availability and affected vehicle subsystems are dependent upon vehicle trim level, region, and optional features.

Normal mode is the default mode every time the vehicle is started. A unique and persistent indicator is displayed in the instrument cluster for each mode.

The Driver Mode Control switch is called the S126 Ride Control Switch, it is a ladder resistor style switch. When a switch is depressed the appropriate resistor is grounded creating a specific voltage signal to the K9 Body Control Module via signal circuit 2203.

Depending on trim level, Normal, Sport, Snow/Ice, Off-Road, Tow/Haul, and Terrain modes may be available.



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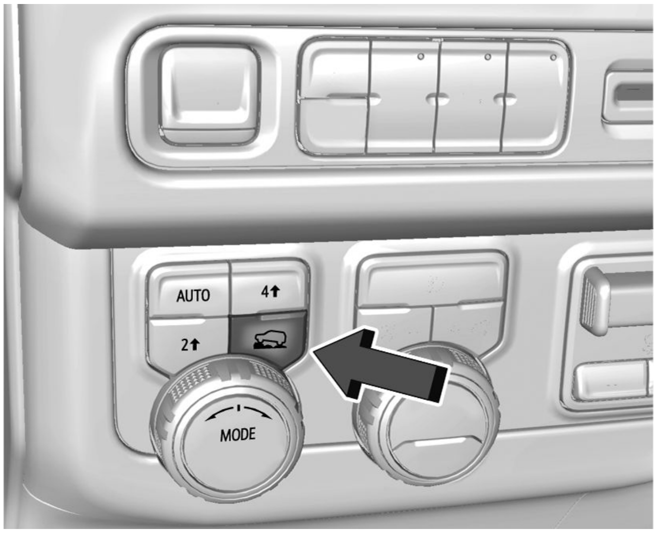
To activate each mode, turn the mode knob on the instrument cluster to the left of the steering wheel.



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To activate Terrain mode, press the Terrain mode button located next to the Mode knob.

**Normal Mode: Use this mode for normal city and highway driving to provide a smooth ride. This setting provides balance between comfort and handling. This is the standard/default mode. There is no persistent indicator in the instrument cluster for this mode.**

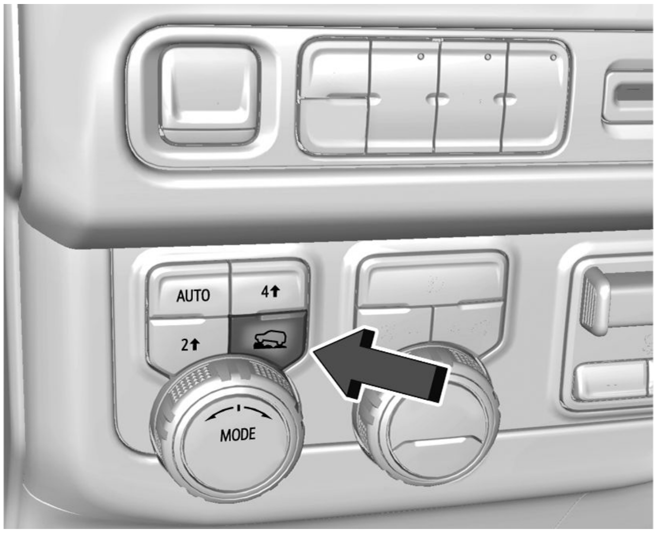
**Sport Mode: Use this mode where road conditions or personal preference demand a more controlled response. When in Sport mode the vehicle automatically down shifts. In this mode, the vehicle also monitors driving behaviors and automatically enables Performance Shift Features when spirited driving is detected. These features maintain lower transmission gears to increase available engine braking and improve acceleration response. The vehicle resumes normal operation after a short period when no spirited driving is detected. The steering changes to provide precise control.**

**Snow/Ice Mode: Use this mode to improve vehicle acceleration on snow and ice covered roads. When active, Snow/Ice mode adjusts acceleration to optimize traction on slippery surfaces. This can compromise the acceleration on dry asphalt. This feature is not intended for use when the vehicle is stuck in sand, mud, ice, snow, or gravel.**

**Off-Road Mode: Use this mode for off-road recreational driving. Off-Road mode should be used to improve driving at moderate speeds, on grass, gravel, dirt, unpaved roads, or snow-covered roads. The accelerator pedal is tuned for off-road use. This mode modifies pedal mapping, ride height, and Traction Control System (TCS) performance. For more information on off-road driving, including important warnings and precautions, see off-road driving in the owners manual.**

**Tow/Haul Mode: Use this mode when hauling heavy loads to provide increased performance and vehicle control. Tow/Haul mode adjusts the transmission shift pattern, steering, and StabiliTrak/Electronic Stability**

**Control (ESC) performance.If the vehicle is turned off while in Tow/Haul mode and then restarted within four hours or less, it will remain active. Otherwise, the vehicle will start in Normal mode.If the vehicle has a diesel engine, exhaust braking is automatically activated when Tow/Haul mode is selected. It maintains vehicle speed by automatically implementing a shift pattern that uses the engine and the transmission to slow the vehicle. The system will command downshifts and use the turbo charger on the engine to reduce vehicle speed when the brake is applied. The normal Tow/Haul shift pattern will return once the vehicle is on a low grade or when the accelerator pedal is pressed.**



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If equipped, select Terrain mode by pressing the below the 4 ↑ transfer case button.

**Terrain Mode: Use this mode when traveling on very rough roads at very low speeds, such as a two-track or heavily rutted road. This mode can also be used for pulling a boat out of the water on a trailer. When in Terrain mode, the vehicle shifts automatically, but will hold a lower gear longer to maximize engine torque. This mode has a unique pedal map and transmission shift pattern for better control at lower speeds and over rough terrain. This mode modifies accelerator pedal mapping, transmission shift pattern, ride height, and electronic Limited Slip Differential (eLSD).When the vehicle comes to a stop on an upward grade, automatic vehicle hold is engaged until the driver presses the accelerator pedal. Stop/Start and cruise control are disabled in Terrain mode.Active Braking during lift throttle will be engaged. This feature automatically applies light braking to simulate heavy engine braking of four-wheel-drive low. It also applies light braking in D (Drive) until the vehicle is at idle speeds. In L1 and L2 light braking will typically bring the vehicle to a stop. Active Braking during lift throttle also reduces trailer braking.Terrain mode automatically exits to Normal mode if the brake temperatures become too hot, electronic parking brake becomes inoperable, or the vehicle cannot perform braking or vehicle hold.**

### - ERROR - Title exists for titlesource=no-title

### Terrain Mode

| Terrain Mode Drive Select | Expected Vehicle Behavior | Ideal Terrain |
|---|---|---|
| Drive (L3-Lx) | Minor deceleration when off throttle and mild ability to modulate throttle; mimics performance of 4 ↓ without torque multiplication. | Grassy fields,<br>mild two tracks,<br>rutted roads,<br>large rolling hills |
| L2 | Moderate deceleration when off throttle and moderate ability to modulate throttle; brings vehicle to a stop in most cases. | Mild rock crawling,<br>heavy ruts,<br>short, steeper grades |
| L1 | Significant deceleration when off throttle and significant ability to modulate throttle; brings vehicle to a stop in most cases. | Rock crawling downhill |

Vehicle Hold Features

- When the vehicle comes to a stop on an incline grade in forward gear or on a decline grade in reverse gear, Vehicle Hold is engaged until the accelerator pedal is pressed.
- When the vehicle is in forward gear on a decline, the vehicle will creep down the hill when the brake pedal is released without pressing the accelerator pedal. The vehicle will also creep forward on flat ground.
- If the driver seat belt is removed and the driver door is opened while the vehicle is being held, Electric Parking Brake (EPB) is engaged.
- EPB engages if the vehicle is held for an extended period.

Terrain mode is only available on vehicles equipped with the single speed transfer case.

Terrain mode can only be active when:

- Vehicle speed is less than 80 km/h (50 mph).
- The transfer case is in 4 ↑.

Frequent use of this mode may cause brake wear due to the light braking.

The vehicle automatically exits the mode if the brakes get too hot. Terrain mode can be turned back on after the brakes have cooled.

When Terrain mode is selected:

- Auto Engine Start/Stop is disabled.

- The Terrain mode indicator displays on the instrument cluster.

## Steering Wheel Controls Description and Operation

The steering wheel control switches duplicate the function of the primary controls of the associated component, through a network of momentary contact switches.

The steering wheel controls are divided into a right-hand set and left-hand set. The switches are connected to a dedicated LIN data circuit.

- The S70E Radio Favorites Switch-Steering Wheel controls the favorites function of the radio.
- The S70F Radio Volume Switch-Steering Wheel allows for volume control of the radio.
- The S70L Cruise Control Switch consists of various cruise control specific functions including cruise on/off functions.
- The S70R Radio Control Switch controls various audio, communication and vehicle systems

Refer to the owners manual for more detailed operation of each steering wheel switch.

## Steering Wheel Control Components

**S70E Radio Favorites Switch-Steering Wheel**
The S70E Radio Favorites Switch-Steering Wheel is a momentary contact switch located on the left rear side of the steering wheel. The S70E Radio Favorites Switch-Steering Wheel has two dedicated 5V Reference circuits for each switch function, the 5V Reference circuits come directly from the S70R Radio Control Switch. When a switch is depressed the signal is sent to the S70R Radio Control Switch that outputs a request through the LIN serial data circuit to perform the requested function.

**S70F Radio Volume Switch-Steering Wheel**
The S70F Radio Volume Switch-Steering Wheel is a momentary contact switch located on the right rear side of the steering wheel. The S70F Radio Volume Switch-Steering Wheel has two dedicated 5V Reference circuits for each switch function, the 5V Reference circuits come directly from the S70R Radio Control Switch. When a switch is depressed the signal is sent to the S70R Radio Control Switch that outputs a request through the LIN serial data circuit to perform the requested function.

**S70L Cruise Control Switch**
The S70L Cruise Control Switch is a resistive ladder design located on the left side of the steering wheel, each control function button having a different resistance value. The S70L Cruise Control Switch has its own 5V reference circuit from the BCM. The BCM detects a specific voltage value that is associated with the cruise control function switch being activated and sends the appropriate serial data message to complete the request.

For information on Cruise Control, refer to *Cruise Control Description and Operation 7-4*

**S70R Radio Control Switch - Steering Wheel**
The S70R Radio Control Switch is a set of momentary contact switches located on the right side of the steering wheel. When a switch is depressed the signal is grounded, the S70R Radio Control Switch sends a request through the LIN serial data circuit to the A11 Radio to perform the requested function.

# Section 7

# Engine/Propulsion

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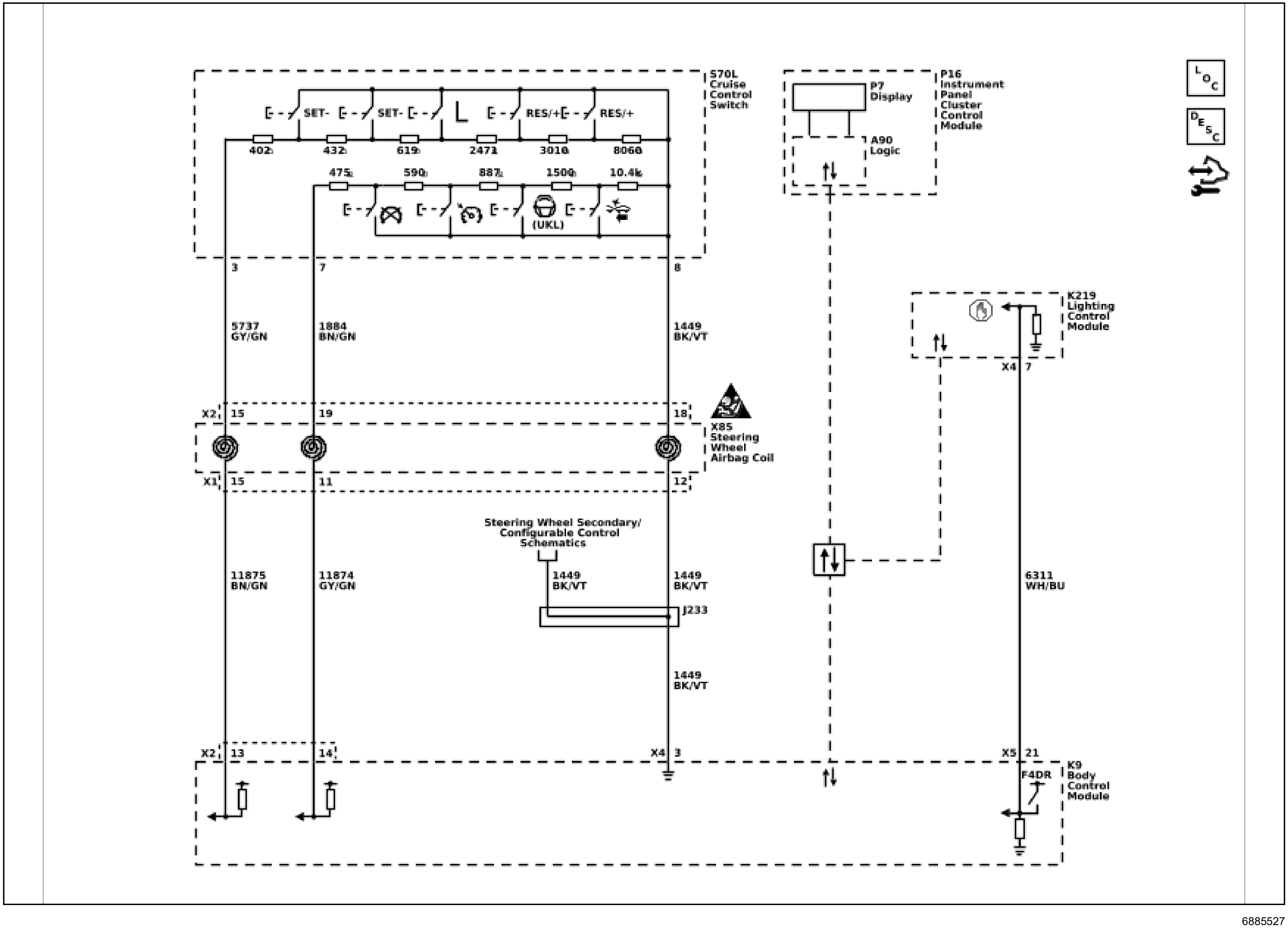
# Engine/Propulsion

## Cruise Control

### Schematic and Routing Diagrams

## Cruise Control Schematics (Cruise Control)


S70L Cruise Control Switch
SET-
SET-
RES/+
RES/+
402Ω
432Ω
619Ω
2471Ω
3010Ω
8060Ω
475Ω
590Ω
887Ω
1500Ω
10.4kΩ
(UKL)
3
7
8
5737 GY/GN
1884 BN/GN
1449 BK/VT
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
K219 Lighting Control Module
X4 7
X2 15
19
18
X85 Steering Wheel Airbag Coil
X1 15
11
12
Steering Wheel Secondary/ Configurable Control Schematics
11875 BN/GN
11874 GY/GN
1449 BK/VT
1449 BK/VT
J233
1449 BK/VT
6311 WH/BU
X2 13
14
X4 3
X5 21
F4DR
K9 Body Control Module
6885527

# Description and Operation

## Cruise Control Description and Operation

**Note:** If the vehicle is equipped with RPO KSG, it also has Adaptive Cruise Control. Refer to the Object Detection or the Driver Assistance Systems subsection for schematics, diagnostics, and description and operation related to Adaptive Cruise Control functions.

Cruise control is a speed control system that maintains a desired vehicle speed under normal driving conditions at speeds above 40 km/h (25 mph). Steep grades may cause variations in the selected vehicle speeds.

The following are the main components of the Cruise Control System:

- The accelerator pedal
- The brake pedal position (BPP) sensor
- The body control module (BCM)
- The cruise on/off switch
- The cruise control cancel switch
- The + RES switch (equivalent to resume/accelerate switch)
- The − SET switch (equivalent to set/coast switch)
- The engine control module (ECM)
- The throttle actuator control (TAC) motor (gasoline engines only)
- The vehicle speed sensor

The body control module (BCM) monitors the signal circuit of the cruise control switches, which are located on the steering wheel. The BCM relays the cruise control switch status to the engine control module (ECM) via the serial data circuit. The ECM uses the status of the cruise control switch to determine when to capture and maintain the vehicle speed. The ECM monitors the vehicle speed signal circuit in order to determine the desired vehicle speed.

Voltage is supplied to the cruise control switch via the steering wheel control switch reference voltage circuit supplied by the BCM. The cruise control function switches are arranged in a resistive ladder design, with each cruise control function switch having a different resistance value. The BCM detects a specific voltage value that is associated with the cruise control function switch being activated. The BCM sends a serial data message to the ECM indicating that the on/off switch is active. Similarly, when the normally open + RES switch or the normally open − SET switch are pressed, the switch closes and the BCM detects the predetermined voltage signal on the cruise control resume/accel and set/coast switch signal circuit. The BCM sends a serial data message to the ECM indicating that the + RES switch or the − SET switch is active.

### Cruise Control Engaged

The Cruise Control System will engage and adjust vehicle speeds, based on the activation of the following cruise control switches, which are located on the steering wheel:

- On/Off
- + RES
- − SET

To engage the Cruise Control System, ensure that the vehicle speed is above 40.2 km/h (25 mph), turn the cruise On/Off switch ON and momentarily press the − SET switch. The ECM will engage the Cruise Control System and record the vehicle speed. The ECM sends a serial data message to the instrument panel cluster (IPC) in order to illuminate the Cruise Engaged indicator in the IPC. Refer to the vehicle owner's manual for the location and operation of the cruise control On/Off indicators and driver information center (DIC) messages.

Pressing the accelerator pedal while the Cruise Control System is engaged, allows the driver to override the Cruise Control System in order to accelerate the vehicle beyond the current set vehicle speed. When the accelerator pedal is released, the vehicle will decelerate and resume the current set vehicle speed.

The driver can also override the current set vehicle speed via the − SET switch and the + RES switch. When the Cruise Control System is engaged, pressing and holding the − SET switch will allow the vehicle to decelerate from the current set vehicle speed without deactivating the Cruise Control System. When the − SET switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the Cruise Control System is engaged, momentarily pressing the − SET switch will allow the vehicle to decelerate at a vehicle specific calibratable increment, commonly 1 km/h or 1 mph, each time that the − SET is momentarily pressed, with a minimum vehicle speed of 38 km/h (24 mph). Refer to the vehicle Owner's Manual for more information.

Pressing and holding the + RES switch, when the Cruise Control System is engaged, will allow the vehicle to accelerate to a greater vehicle speed than the current set vehicle speed. When the + RES switch is released, the ECM will record the vehicle speed and maintain the vehicle speed as the new set vehicle speed. When the Cruise Control System is engaged, momentarily pressing the + RES switch will allow the vehicle to accelerate at a vehicle specific calibratable increment, commonly 1 km/h or 1 mph, each time that the + RES switch is momentarily pressed. Momentarily activating the + RES switch will recall the previous vehicle speed, after the cruise control system has been disengaged by pressing the brake pedal, or CANCEL switch. Refer to the vehicle Owner's Manual for more information.

### Cruise Control Disengaged

The engine control module (ECM) disengages the cruise control operation based on the signals from the following switches:

- The brake pedal position (BPP) sensor
- The On/Off switch
- The cruise control cancel switch

The Cruise Control System will disengage when the brake pedal is applied. The body control module (BCM) monitors the BPP sensor via the BPP sensor signal circuit as the voltage signal increases while the pedal is further applied. The ECM monitors the BPP signal through a discrete input and a serial data message signal from the BCM indicating the brake status. When either signal indicates the brake pedal is applied, the ECM will disengage the cruise control system.

The Cruise Control System will also disengage when the cruise control on/off switch is switched OFF, or the cruise control cancel switch is activated. The body control module (BCM) determines when the cruise control cancel switch is activated. When the normally open cancel switch is closed, the BCM detects the predetermined voltage signal on the cruise control function switch circuit. The vehicle speed stored in the memory of the engine control module will be erased when the cruise control On/Off switch is turned OFF, or the ignition switch is turned OFF. The BCM sends a serial data message to the ECM in order to disengage the cruise control system. When the Cruise Control System has been disengaged, the ECM sends a serial message to the instrument panel cluster (IPC) in order to turn OFF the Cruise Engaged indicator.

Every time the Cruise Control System is disengaged, the ECM will keep track of the reason for system disengagement. The last 8 disengagement reasons will be recorded within the ECM memory. The scan tool will display the last 8 Cruise Disengage History parameters, in which one out of approximately 50 possible reasons will be displayed in each of these 8 parameters. For the disengagement reason to be displayed within the scan tool parameter the Cruise Control System is active and disengagement is requested.

When engagement of the system is requested but an engagement inhibit is present, the most recent inhibit reason is recorded in the ECM history. The scan tool will display the most recent inhibit reason, in which one out of approximately 50 possible reasons will be displayed.

### Cruise Control Inhibited

The engine control module (ECM) inhibits the cruise control operation when any of the following conditions exist:

- The ECM has not detected a brake pedal activation from the body control module (BCM) this ignition cycle.
- A Cruise Control System DTC has been set.
- The vehicle speed is less than 38.6 km/h (24 mph).
- The vehicle speed is too high.
- The vehicle is in PARK, REVERSE, NEUTRAL, or 1st gear.
- The engine RPM is low.
- The engine RPM is high.
- The system voltage is not between 9 volts and 16 volts.
- The Antilock Brake System (ABS)/Traction Control System (TCS) is active for more than a calibratable time (typically 0.3 to 0.7 seconds).

### Cruise Control Inhibit Reasons

This is a general list of inhibit reasons. Not every inhibit reason is applicable to all vehicles. Refer to the scan tool inhibit reason list for the last 8 reasons that have been recorded during the current ignition cycle.

| Scan Tool Name | Description | Long Description |
|---|---|---|
| Acceleration Rate too High | High acceleration | The vehicle acceleration rate is too high. |
| TRAILER BRAKES APPLIED | Trailer brakes applied | The trailer brake system has been activated. |

| Scan Tool Name | Description | Long Description |
|---|---|---|
| Acceleration Time | Rate limiting fault | Cruise torque request rate limiting active too long. |
| Adaptive Cruise Control Configuration Incorrect | Adaptive cruise control option mismatch | The cruise control type (adaptive cruise or conventional cruise) is mismatched between the engine control module (ECM) and the body control module (BCM). |
| Antilock Braking System Active | Antilock Braking System Active | The antilock braking system was active. Only reported on enhanced cruise control vehicles. |
| Automatic Braking Engine Torque Request Signal Communication Malfunction | Automatic braking engine torque request signal communication malfunction | An engine control module to electronic brake control module (EBCM) serial data fault is active or communication has been lost between the modules. |
| Automatic Braking Malfunction | Brake system malfunction | The electronic brake control module has detected a failure that does not allow automatic braking to be performed. |
| Axle Torque Serial Communication Malfunction | Axle Torque Serial Communication Malfunction | The adaptive cruise control is being inhibited by the ECM because a serial data signal timeout error has occurred with the hybrid max/min torque signals. |
| Battery Voltage Too High | Voltage above high voltage threshold | The ignition voltage is too high at the engine control module (typically 18 volts). |
| Battery Voltage Too Low | Voltage below low voltage threshold | The ignition voltage is low at the engine control module (typically 9 volts). |
| Brake Pedal Applied | Brake pedal apply | The brake pedal was applied. |
| Brake Pedal Not Initialized | Brake before cruise | The brake pedal has not been seen as applied prior to driver request to engage cruise with set switch. A brake pedal apply must be seen before allowing cruise engagement during each key cycle. On a vehicle equipped with a manual transmission, a clutch pedal apply may satisfy the brake pedal apply criteria. |
| Brake Pedal Position Malfunction | Brake pedal position signal invalid | A brake pedal apply circuit fault has been detected. |
| Brake Pedal Position Signal Malfunction | DTC P0703 is active or maximum time elapsed without receiving a valid Brake Pedal Position signal. | A serial data fault is active or communication has been lost with the module sending the brake pedal apply state. |
| Brake Pedal Pressure Detected | Brake pedal driver applied pressure detected | A brake pedal apply has been detected based on brake pedal pressure as measured by the electronic brake control module. |
| Brake Pedal Released Position Not Learned | Brake apply sensor home position not learned | The brake pedal position sensor released position is not learned. |
| Brake System Malfunction | Adaptive cruise control automatic braking failed | Adaptive cruise control automatic braking inoperative. |
| Calculated Torque | Calculated engine torque | The engine torque calculation is incorrect. |
| Clutch Pedal Applied | Clutch switch active | The clutch pedal was applied. |
| Coast Below Minimum Speed | Coast below low speed inhibit | The Set/Coast switch was depressed and the vehicle slowed below the minimum cruise control operating speed. |
| Coast Mode | Coast disengage | Cruise control is in coast mode with the Set/Coast switch depressed and is requesting no throttle. |
| Control Function Active | DLC override | A scan tool is plugged into the Data Link Connector (DLC) connector. |
| Control Module Memory Malfunction | Memory failure | A control module memory failure has been detected. |
| Control Module Processor Malfunction | Processor integrity fault (random access memory corruption) | An engine control module software error has occurred. |

| Scan Tool Name | Description | Long Description |
|---|---|---|
| Crawl Mode Active | Crawl Mode Active | Crawl mode is active and inhibiting cruise control. |
| Cruise Control Cancel Switch Active | Cancel switch active | The cruise control cancel switch was depressed. |
| Cruise Control Software Malfunction | Sequence of completion checks | A cruise control software execution error has occurred. |
| Cruise Control Switch Inactive | On/Off switch in Off state | The cruise control On/Off switch is turned off. |
| Cruise Control Switch Invalid | Analog cruise switch input out of range | The cruise control switch voltage signal is in an invalid range. |
| Cruise Control Switch Serial Communication Malfunction | Serial data fault (cruise switch serial communication fault) | The cruise control switch serial data fault is active or communication has been lost with the module sending cruise control switch states. |
| Deceleration Rate Too High | High deceleration | The vehicle deceleration rate is too high. |
| Diagnostic Trouble Code (DTC) Set | Malfunction in PCM/ECM (DTC active) | A DTC is active or in history that inhibits cruise control operation. |
| Distance Sensing Cruise Control Brake Pedal Applied | Distance Sensing Cruise Control Brake Pedal Applied | Adaptive cruise control is being inhibited by the ECM because a brake pedal apply has occurred. |
| Distance Sensing Cruise Control Cancel Switch Active | Distance Sensing Cruise Control Cancel Switch Active | Adaptive cruise control is being inhibited by the ECM because the driver applied the cancel switch. |
| Distance Sensing Cruise Control Data | Serial data fault for adaptive cruise control throttle control and brake control signals sent by the distance sensing cruise control module | A distance sensing cruise control module serial data fault is active or communication has been lost between the distance sensing cruise control module and the engine control module. |
| Distance Sensing Cruise Control Inhibit | Distance sensing cruise control inhibited | The distance sensing cruise control system is inhibited. |
| Distance Sensing Cruise Control Invalid Engage | Distance Sensing Cruise Control Invalid Engage | Adaptive cruise control is being inhibited by the ECM because an invalid sequence of cruise control applies, brake pedal applies, or an invalid speed range has been detected. |
| Distance Sensing Cruise Control Off | Distance Sensing Cruise Control Off | Adaptive cruise control is being inhibited by the ECM because the driver has turned off the cruise on/off switch. |
| Distance Sensing Cruise Control Reduced Engine Power | Distance Sensing Cruise Control Reduced Engine Power | Adaptive cruise control is being inhibited by the ECM due to a fault resulting in “Reduced Engine Power”. |
| Driven Wheel Speed Higher Than Non Driven Wheel Speed | Driven wheel speed greater (wheel slip detection) | The driven wheel speed is greater than the non driven wheel speed (slip detection). |
| Engine Control Module | PCM/ECM inhibit (RAM corruption) | Engine control module internal communication error. |
| Engine Control Module (ECM) Reset | ECM running reset | An engine control module running reset has occurred. |
| Engine Overspeed Protection Active | Injectors disabled (engine overspeed fuel cut-off active) | Engine RPM limiter active with fuel cut off active. |
| Engine Overtemperature Protection Active | Engine metal overtemp active | The engine is over temperature. The engine is overheated. |
| Engine Run Time | Engine run time not elapsed | The engine has not been running long enough, typically five seconds. |
| Engine Speed | Engine speed too low or too high | The engine RPM is too low (near stall) or too high (near engine RPM fuel shutoff). |
| Excessive Accelerator Position Override | Pedal greater than cruise (override) | The driver has overridden cruise control set speed with accelerator pedal for greater than an allowable time. |
| 1st Gear | First Gear | Transmission is engaged in 1st gear. |

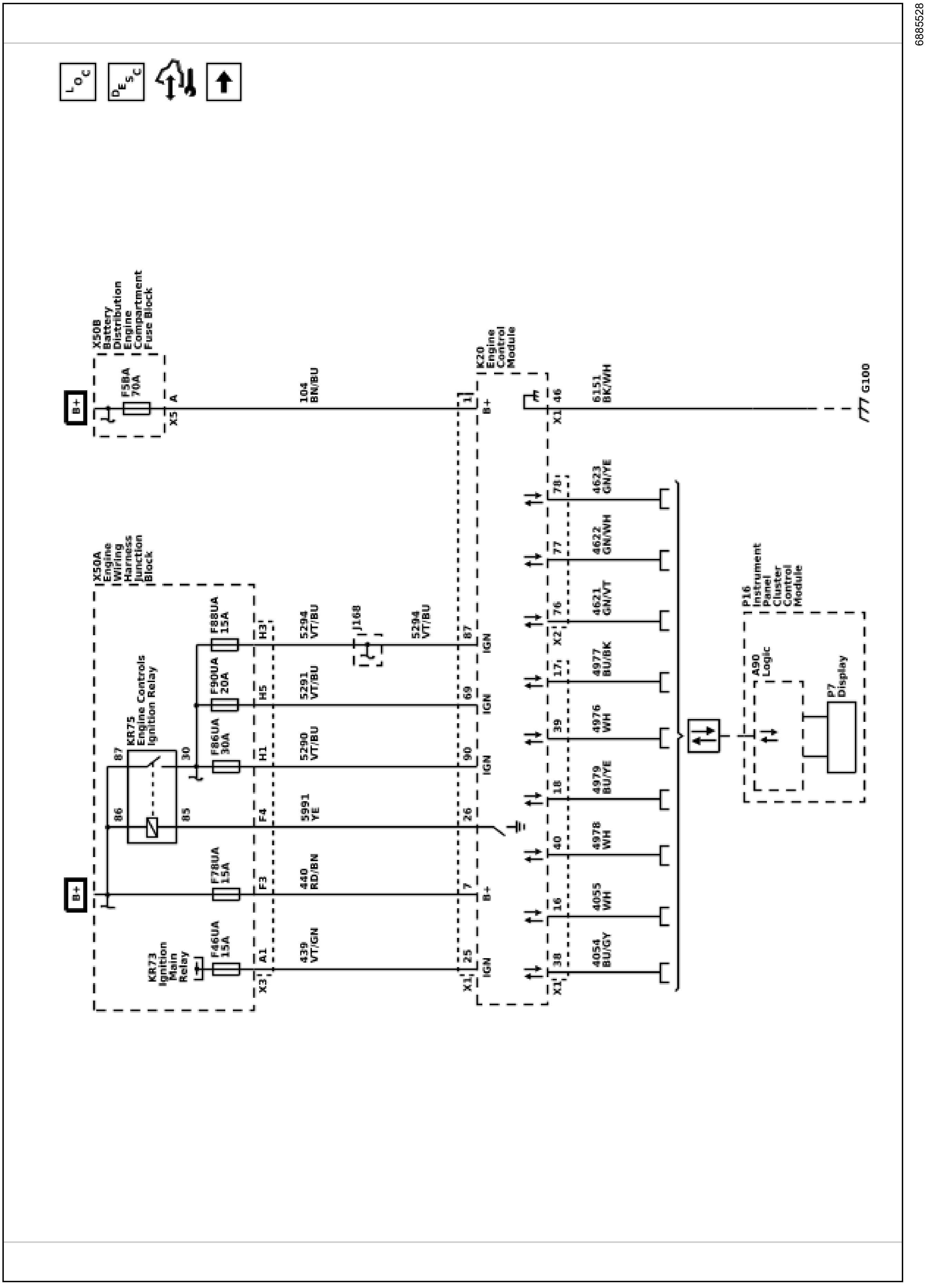
| Scan Tool Name | Description | Long Description |
|---|---|---|
| Gear Change without Applied Clutch Pedal | Manual transmission out of gear with no clutch pedal apply | Manual transmission shifted to Neutral without clutch pedal being applied. |
| Hill Descent Control Active | Hill Descent Control System Active | The hill descent control system has gone active. |
| Hill Descent Control Serial Communication Malfunction | Hill Descent Control Serial Communication Malfunction | An electronic brake control module serial data fault is active or communication has been lost between the EBCM and ECM. |
| Hybrid/EV System | Hybrid Cruise Disengage | Cruise control is inhibited on hybrid applications when “Regen on Demand” is requested by the driver via the tap-up/tap-down paddles. |
| Illegal Mode | Illegal cruise mode | The cruise control mode is incorrect based on switch states. |
| Lane Center Control Serial Data Error | Lane Center Control Serial Communication Malfunction | Adaptive cruise control is being inhibited by the ECM because a serial data error has been detected on a vehicle with Lane Center Control. |
| Non Driven Wheel Speed Higher Than Drive Wheel Speed | Non-driven wheel speed greater | The non driven wheel speed is greater than the driven wheel speed. |
| None | None | This disengagement reason may be displayed after a dead battery repair or module replacement. |
| Park Brake Applied | Park brake switch signal active | The parking brake is applied. |
| Power Take-Off Active | Power Take Off active | The Power Take Off (PTO) system is active. |
| Rear Axle in Low Range | Rear axle in low | The rear axle is in low range. |
| Set/Coast and Resume/Accelerate Switches Active Simultaneously | SET and RESUME switches simultaneously active | The Set/Coast and Resume/Accelerate switches were pressed simultaneously. |
| Set/Coast Switch Active With Vehicle Speed Higher Than Set Point | Over schedule tap-down | The Set/Coast switch is selected, vehicle speed is above set speed and does not decrease. May be due to traveling down hill. |
| Speed Limiting/Warning System On | Speed limiter/warning On/Off switch turned on | Driver has turned on the Speed Limiter/Warning on/off switch. Cruise is disabled/inhibited and cruise on/off switch will be set to Off. |
| Throttle Actuator Control System | Electronic throttle control prevents cruise operation | The electronic throttle control system has detected a failure in the throttle control hardware. |
| Traction Control Active | Traction control active | The traction control system was active. |
| Traction Control System Malfunction | Traction Control System Malfunction | A fault is present in the traction control system. |
| Traction Control System Off | Traction Control System Off | The traction control system has been turned off by the driver. |
| Transfer Case in 4WD Low Range | Transfer case in 4WD Low | The transfer case is in low range. |
| Transmission Gear Ratio Malfunction | Transmission gear fault | A transmission DTC is active or in history, that inhibits cruise control operation. |
| Transmission Not in Forward Gear | Transmission in neutral, reverse or park | The transmission gear selector is not in a forward gear. |
| Vehicle Overspeed Protection Active | MPH limited fuel (vehicle overspeed fuel cut-off active) | The vehicle overspeed protection is active with fuel cut off active. |
| Vehicle Speed Higher Than Set Point | Over schedule | Vehicle speed has exceeded driver selected set speed by more than an allowable amount. This may occur while driving down a significant grade or driver overriding cruise while performing a passing maneuver. |
| Vehicle Speed Lower Than Set Point | Under schedule | The vehicle speed is below cruise control set speed by more than an allowable amount. |
| Vehicle Speed Too High | Vehicle speed exceeds high speed threshold | Vehicle speed has exceeded maximum cruise operating speed. |

| Scan Tool Name | Description | Long Description |
|---|---|---|
| Vehicle Speed Too Low | Vehicle speed drops below low speed threshold | Vehicle speed dropped below the cruise control minimum operating speed. May be due to hilly terrain and low vehicle speed. Manual transmission gear selection and engine torque may contribute to this disengagement reason. |
| Vehicle Stability System Active | Vehicle stability control active | The vehicle stability control system was active. |
| Vehicle Stability System Malfunction | Vehicle Stability System Malfunction | A fault has been detected in the vehicle stability control system. |
| Vehicle Stability System Off | Vehicle Stability System Off | The vehicle stability control system has been turned off by the driver. |

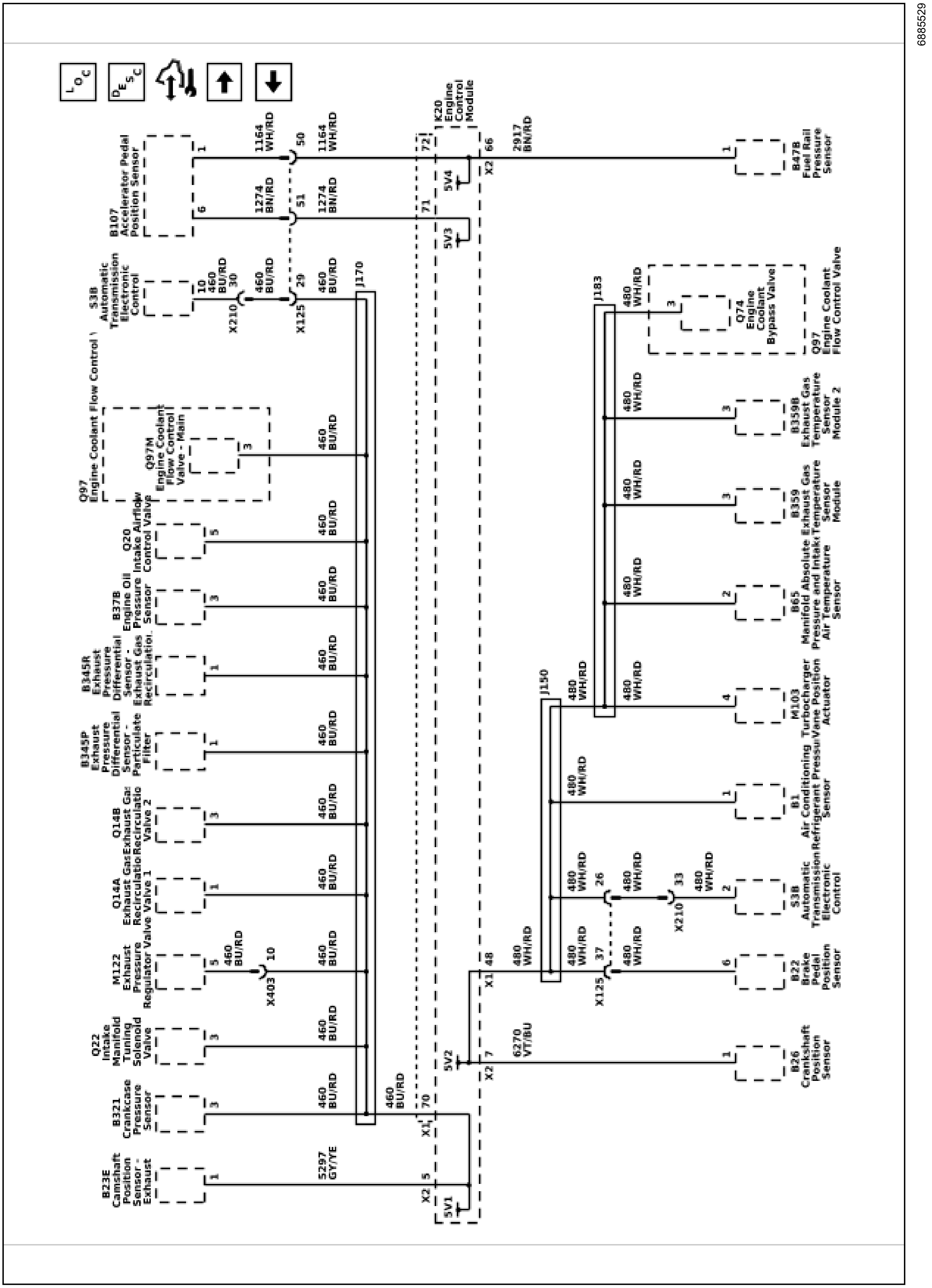
# Engine Controls and Fuel - 3.0L Diesel

## Schematic and Routing Diagrams

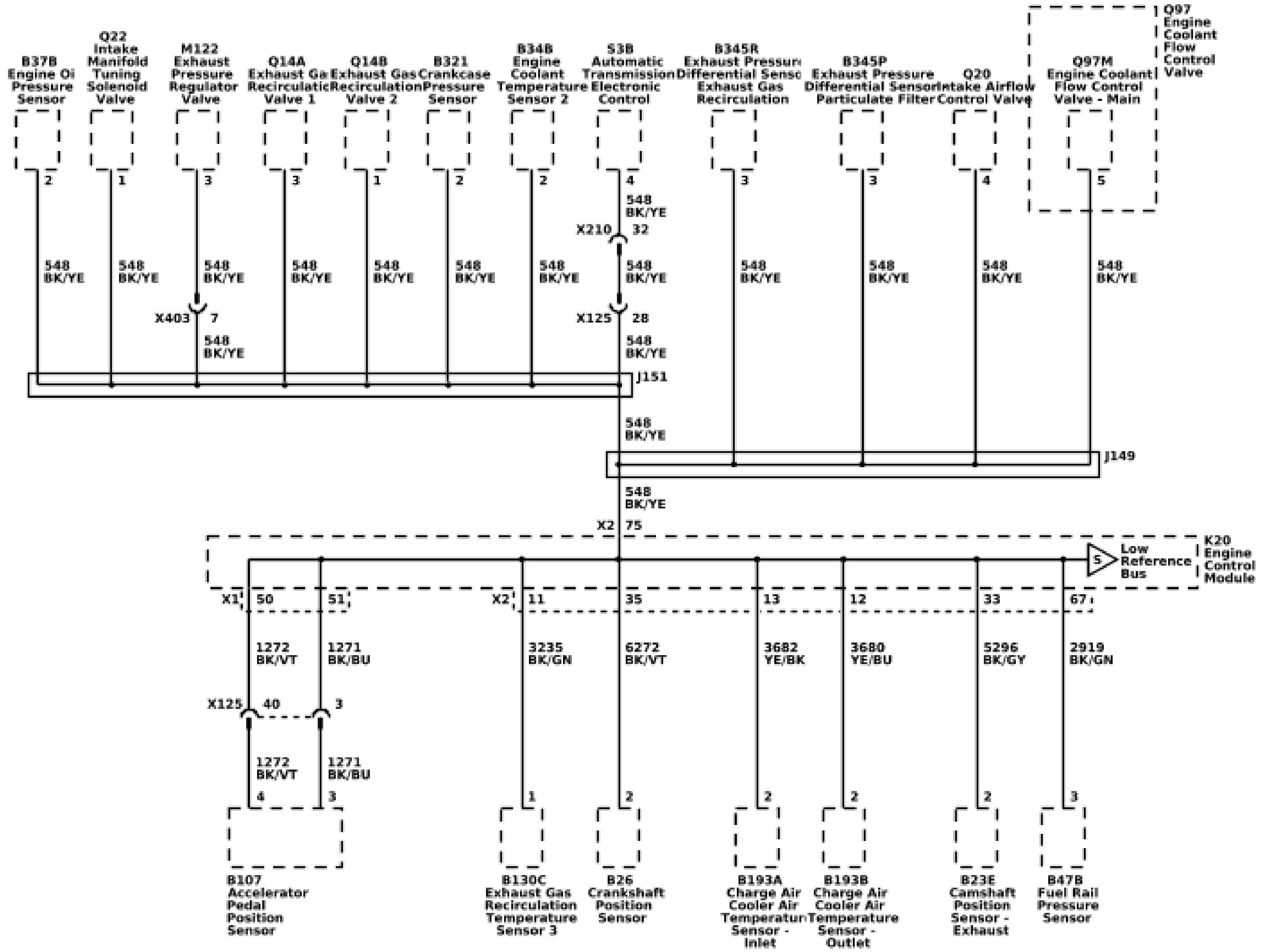
## Engine Controls Schematics (Engine Control Module Power, Ground, Serial Data, and MIL)


6885528
B+
X50B Battery Distribution Engine Compartment Fuse Block
F58A 70A
X5 A
104 BN/BU
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F46UA 15A
F78UA 15A
KR75 Engine Controls Ignition Relay
87
86
85
30
F86UA 30A
F90UA 20A
F88UA 15A
X3 A1
F3
F4
H1
H5
H3
439 VT/GN
440 RD/BN
5991 YE
5290 VT/BU
5291 VT/BU
5294 VT/BU
J168
5294 VT/BU
K20 Engine Control Module
X1 25 IGN
7 B+
26
90 IGN
69 IGN
87 IGN
1 B+
X1 46
6151 BK/WH
G100
X1 38
16
40
18
39
17
X2 76
77
78
4054 BU/GY
4055 WH
4978 WH
4979 BU/YE
4976 WH
4977 BU/BK
4621 GN/VT
4622 GN/WH
4623 GN/YE
P16 Instrument Panel Cluster Control Module
A90 Logic
P7 Display

## Engine Controls Schematics (5V Reference Bus)

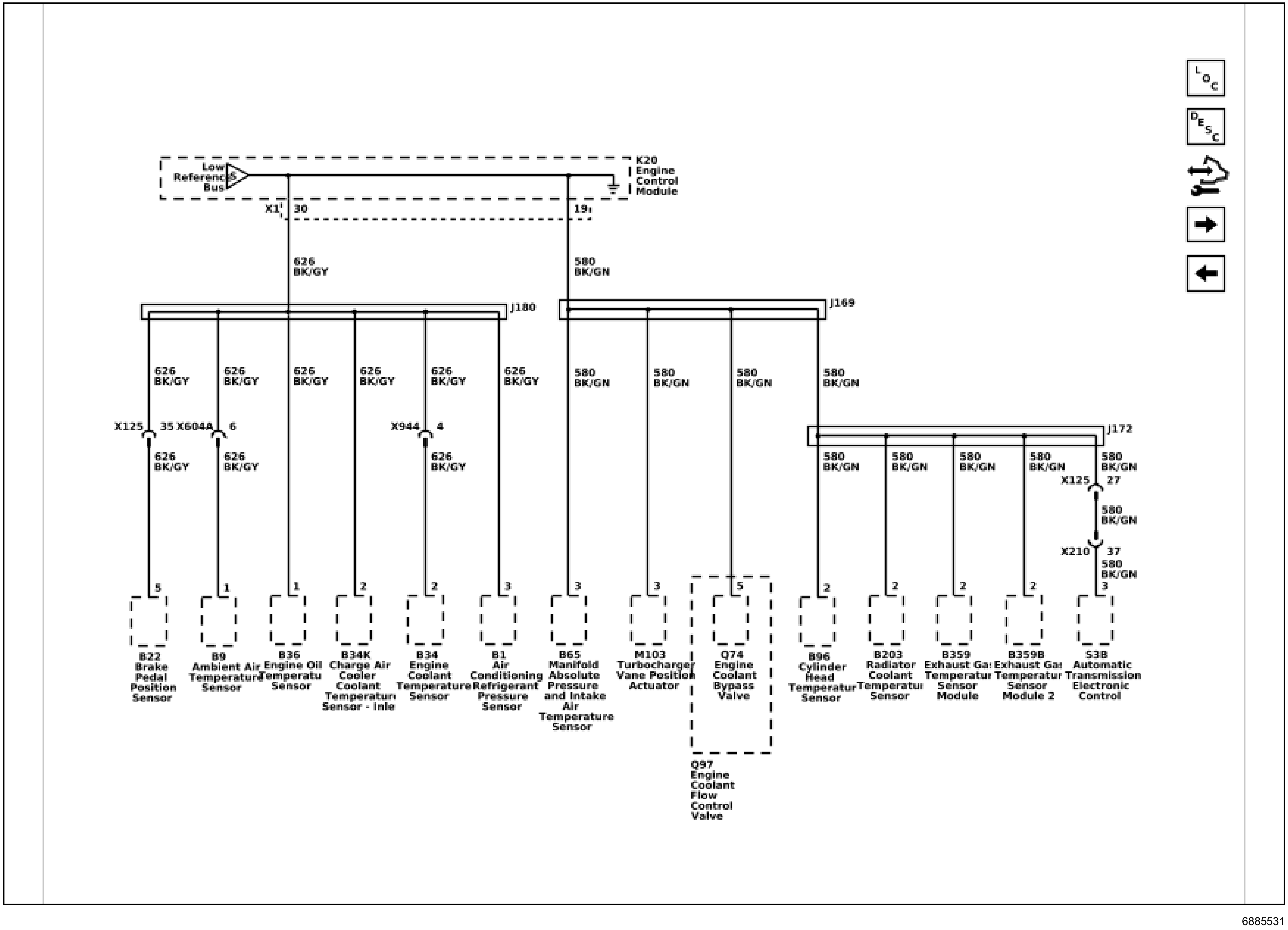

6885529
K20 Engine Control Module
B107 Accelerator Pedal Position Sensor
1164 WH/RD
1274 BN/RD
50
51
72
71
66
5V4
5V3
X2
2917 BN/RD
B47B Fuel Rail Pressure Sensor
S38 Automatic Transmission Electronic Control
460 BU/RD
X210
X125
30
29
10
J170
Q97 Engine Coolant Flow Control Valve
Q97M Engine Coolant Flow Control Valve - Main
Q20 Intake Airflow Control Valve
B37B Engine Oil Pressure Sensor
B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation
B345P Exhaust Pressure Differential Sensor - Particulate Filter
Q14B Exhaust Gas Recirculation Valve 2
Q14A Exhaust Gas Recirculation Valve 1
M122 Exhaust Pressure Regulator Valve
X403
Q22 Intake Manifold Tuning Solenoid Valve
B321 Crankcase Pressure Sensor
B23E Camshaft Position Sensor - Exhaust
5297 GY/YE
X1
70
5V1
5V2
7
6270 VT/BU
48
480 WH/RD
J150
J183
Q74 Engine Coolant Bypass Valve
B359B Exhaust Gas Temperature Sensor Module 2
B359 Exhaust Gas Temperature Sensor Module
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
M103 Turbocharger Vane Position Actuator
B1 Air Conditioning Refrigerant Pressure Sensor
26
33
S38 Automatic Transmission Electronic Control
37
B22 Brake Pedal Position Sensor
B26 Crankshaft Position Sensor

## Engine Controls Schematics (Low Reference Bus 1 of 2)


B37B Engine Oi Pressure Sensor
Q22 Intake Manifold Tuning Solenoid Valve
M122 Exhaust Pressure Regulator Valve
Q14A Exhaust Ga Recirculatio Valve 1
Q14B Exhaust Gas Recirculation Valve 2
B321 Crankcase Pressure Sensor
B34B Engine Coolant Temperature Sensor 2
S3B Automatic Transmission Electronic Control
B345R Exhaust Pressur Differential Senso Exhaust Gas Recirculation
B345P Exhaust Pressure Differential Sensor Particulate Filter
Q20 Intake Airflow Control Valve
Q97M Engine Coolant Flow Control Valve - Main
Q97 Engine Coolant Flow Control Valve
2
1
3
3
1
2
2
4
3
3
4
5
548 BK/YE
X210 32
X403 7
X125 28
J151
J149
X2 75
K20 Engine Control Module
Low Reference Bus
S
X1 50
51
X2 11
35
13
12
33
67
1272 BK/VT
1271 BK/BU
3235 BK/GN
6272 BK/VT
3682 YE/BK
3680 YE/BU
5296 BK/GY
2919 BK/GN
X125 40
3
4
3
1
2
2
2
2
3
B107 Accelerator Pedal Position Sensor
B130C Exhaust Gas Recirculation Temperature Sensor 3
B26 Crankshaft Position Sensor
B193A Charge Air Cooler Air Temperatur Sensor - Inlet
B193B Charge Air Cooler Air Temperature Sensor - Outlet
B23E Camshaft Position Sensor - Exhaust
B47B Fuel Rail Pressure Sensor

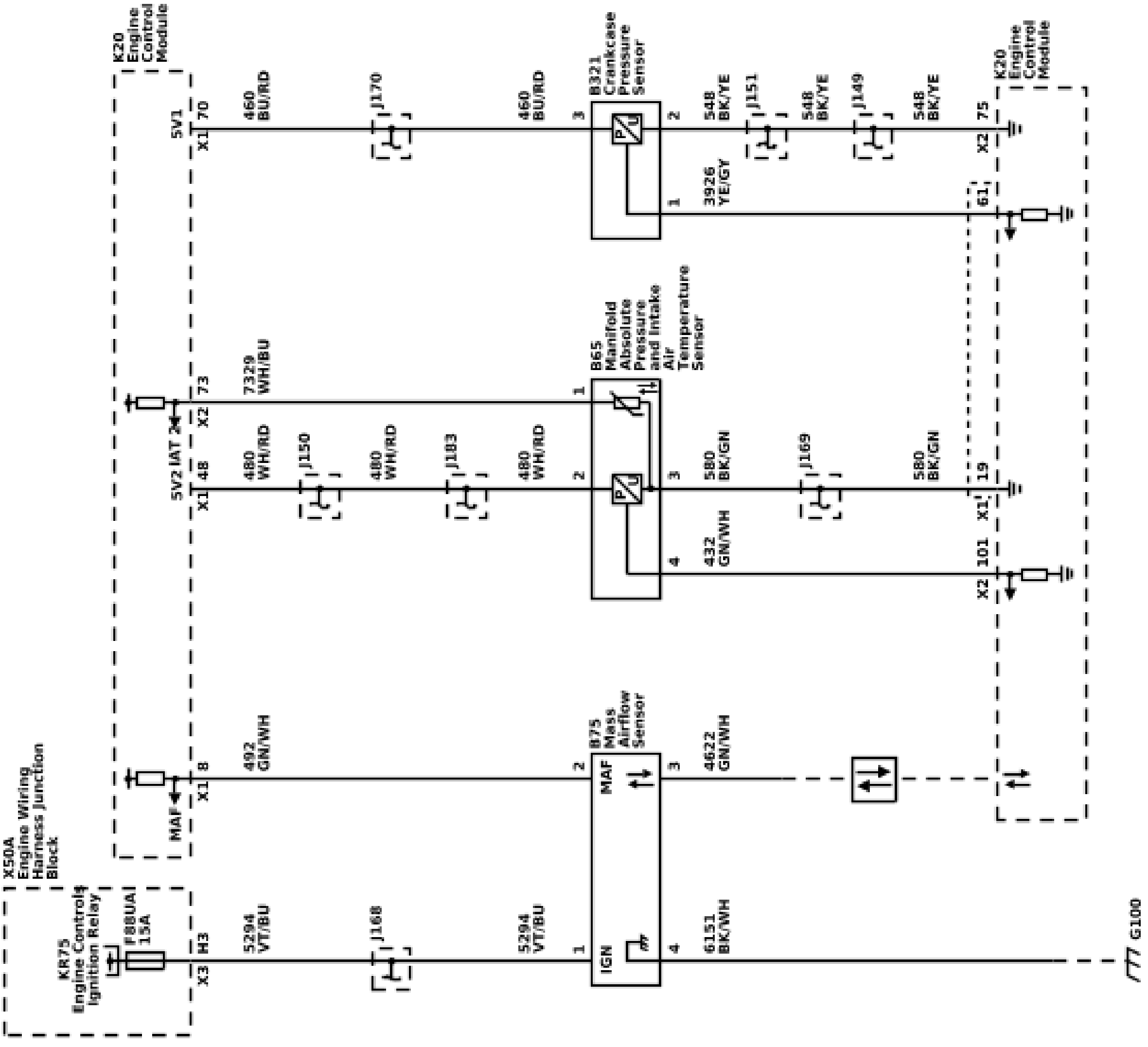
6885530

## Engine Controls Schematics (Low Reference Bus 2 of 2)

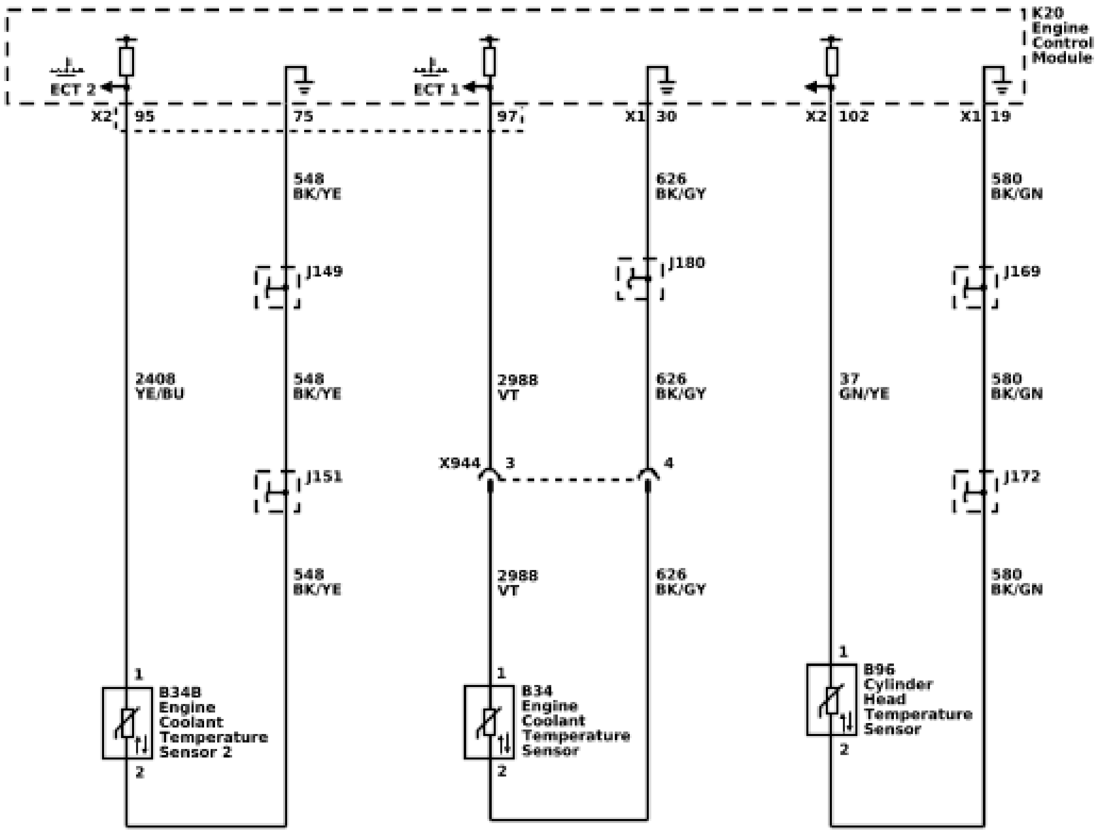

K20 Engine Control Module
Low Reference Bus
X1 30
19
626 BK/GY
580 BK/GN
J180
J169
J172
X125 35
X604A 6
X944 4
X125 27
X210 37
626 BK/GY
580 BK/GN
5
1
2
3
B22 Brake Pedal Position Sensor
B9 Ambient Air Temperature Sensor
B36 Engine Oil Temperatu Sensor
B34K Charge Air Cooler Coolant Temperatur Sensor - Inle
B34 Engine Coolant Temperature Sensor
B1 Air Conditioning Refrigerant Pressure Sensor
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
M103 Turbocharger Vane Position Actuator
Q74 Engine Coolant Bypass Valve
Q97 Engine Coolant Flow Control Valve
B96 Cylinder Head Temperatur Sensor
B203 Radiator Coolant Temperatu Sensor
B359 Exhaust Ga Temperatur Sensor Module
B359B Exhaust Ga Temperatur Sensor Module 2
S38 Automatic Transmission Electronic Control
6885531

6885532

## Engine Controls Schematics (Engine Data Sensors - Intake Air and Crankcase Pressure Sensors)

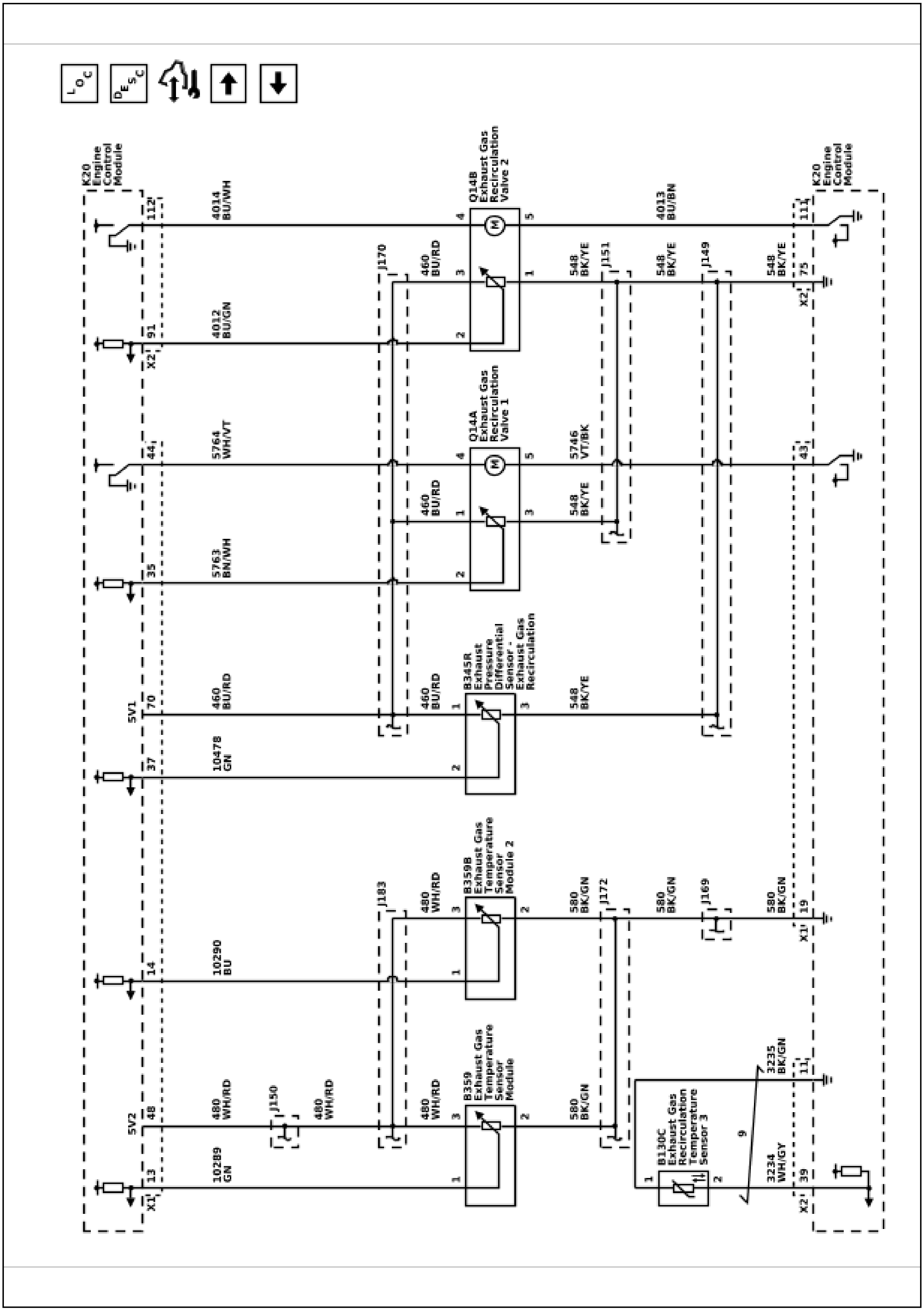

K20 Engine Control Module
X1 70
5V1
460 BU/RD
J170
460 BU/RD
3
B321 Crankcase Pressure Sensor
2
548 BK/YE
J151
548 BK/YE
J149
548 BK/YE
X2 75
K20 Engine Control Module
1
3926 YE/GY
61
X2 73
7329 WH/BU
1
B65 Manifold Absolute Pressure and Intake Air Temperature Sensor
5V2 IAT 2
X1 48
480 WH/RD
J150
480 WH/RD
J183
480 WH/RD
2
3
580 BK/GN
J169
580 BK/GN
X1 19
4
432 GN/WH
X2 101
X1 8
MAF
492 GN/WH
2
B75 Mass Airflow Sensor
MAF
3
4622 GN/WH
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
X3 H3
5294 VT/BU
J168
5294 VT/BU
1
IGN
4
6151 BK/WH
G100

## Engine Controls Schematics (Engine Data Sensors - Coolant and Engine Metal Temperature)


K20
Engine
Control
Module
ECT 2
X2 95
75
ECT 1
97
X1 30
X2 102
X1 19
548
BK/YE
626
BK/GY
580
BK/GN
J149
J180
J169
2408
YE/BU
548
BK/YE
2988
VT
626
BK/GY
37
GN/YE
580
BK/GN
X944 3
4
J151
J172
548
BK/YE
2988
VT
626
BK/GY
580
BK/GN
1
B34B
Engine
Coolant
Temperature
Sensor 2
2
1
B34
Engine
Coolant
Temperature
Sensor
2
1
B96
Cylinder
Head
Temperature
Sensor
2

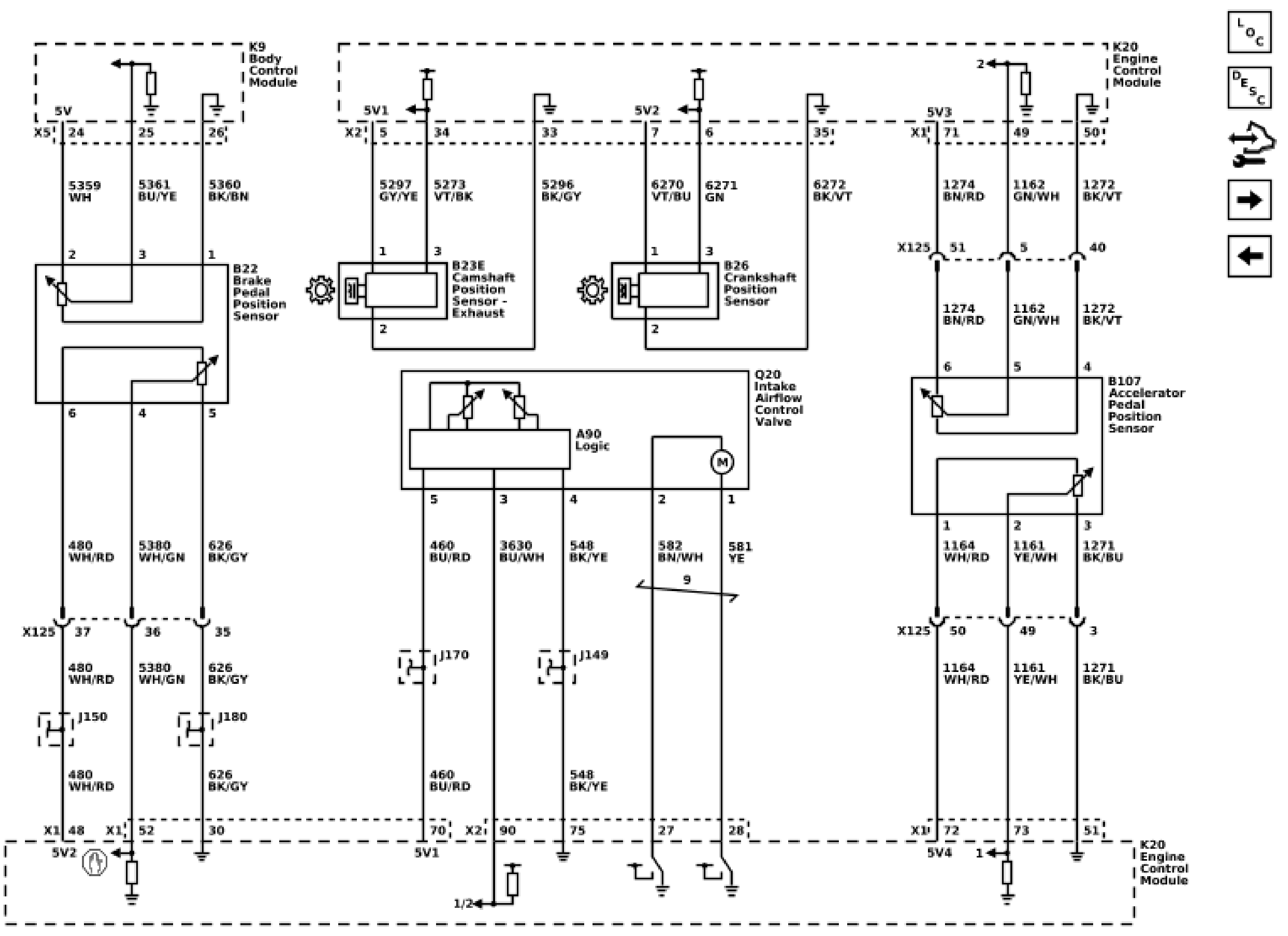
6885533

## Engine Controls Schematics (Engine Data Sensors - EGR and Exhaust Gas Temperature)


K20 Engine Control Module
X1
13
10289 GN
5V2
48
480 WH/RD
J150
480 WH/RD
14
10290 BU
J183
480 WH/RD
B359 Exhaust Gas Temperature Sensor Module
1
2
3
580 BK/GN
J171
B359B Exhaust Gas Temperature Sensor Module 2
480 WH/RD
580 BK/GN
J172
580 BK/GN
J169
580 BK/GN
X1
19
37
10478 GN
5V1
70
460 BU/RD
B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation
460 BU/RD
548 BK/YE
35
5763 BN/WH
44
5764 WH/VT
Q14A Exhaust Gas Recirculation Valve 1
M
4
5
460 BU/RD
548 BK/YE
5746 VT/BK
43
X2
91
4012 BU/GN
112
4014 BU/WH
J170
460 BU/RD
Q14B Exhaust Gas Recirculation Valve 2
548 BK/YE
J151
548 BK/YE
J149
548 BK/YE
75
4013 BU/BN
111
B130C Exhaust Gas Recirculation Temperature Sensor 3
3234 WH/GY
39
3235 BK/GN
11
9

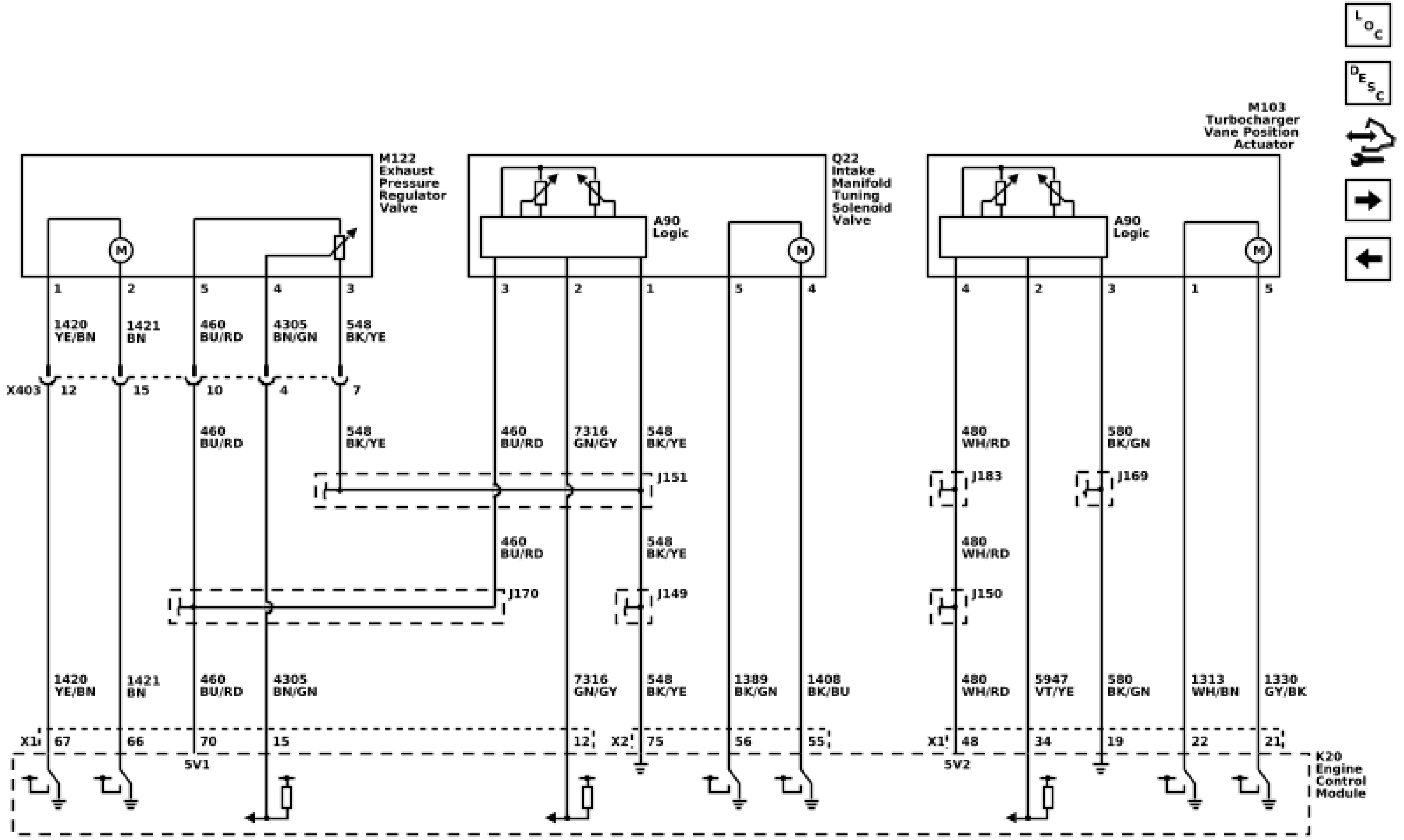
6885534

## Engine Controls Schematics (Engine Data Sensors - Injector Timing Controls and Override)


K9 Body Control Module
5V
X5 24
25
26
5359 WH
5361 BU/YE
5360 BK/BN
2
3
1
B22 Brake Pedal Position Sensor
6
4
5
480 WH/RD
5380 WH/GN
626 BK/GY
X125 37
36
35
480 WH/RD
5380 WH/GN
626 BK/GY
J150
J180
480 WH/RD
626 BK/GY
X1 48
X1 52
30
5V2
5V1
X2 5
34
33
5297 GY/YE
5273 VT/BK
5296 BK/GY
1
3
B23E Camshaft Position Sensor - Exhaust
2
5V2
7
6
35
6270 VT/BU
6271 GN
6272 BK/VT
1
3
B26 Crankshaft Position Sensor
2
Q20 Intake Airflow Control Valve
A90 Logic
M
5
3
4
2
1
460 BU/RD
3630 BU/WH
548 BK/YE
582 BN/WH
581 YE
9
J170
J149
460 BU/RD
548 BK/YE
70
X2 90
75
27
28
5V1
1/2
K20 Engine Control Module
5V3
X1 71
49
50
2
1274 BN/RD
1162 GN/WH
1272 BK/VT
X125 51
5
40
1274 BN/RD
1162 GN/WH
1272 BK/VT
6
5
4
B107 Accelerator Pedal Position Sensor
1
2
3
1164 WH/RD
1161 YE/WH
1271 BK/BU
X125 50
49
3
1164 WH/RD
1161 YE/WH
1271 BK/BU
X1 72
73
51
5V4
1
K20 Engine Control Module
L O C
D E S C

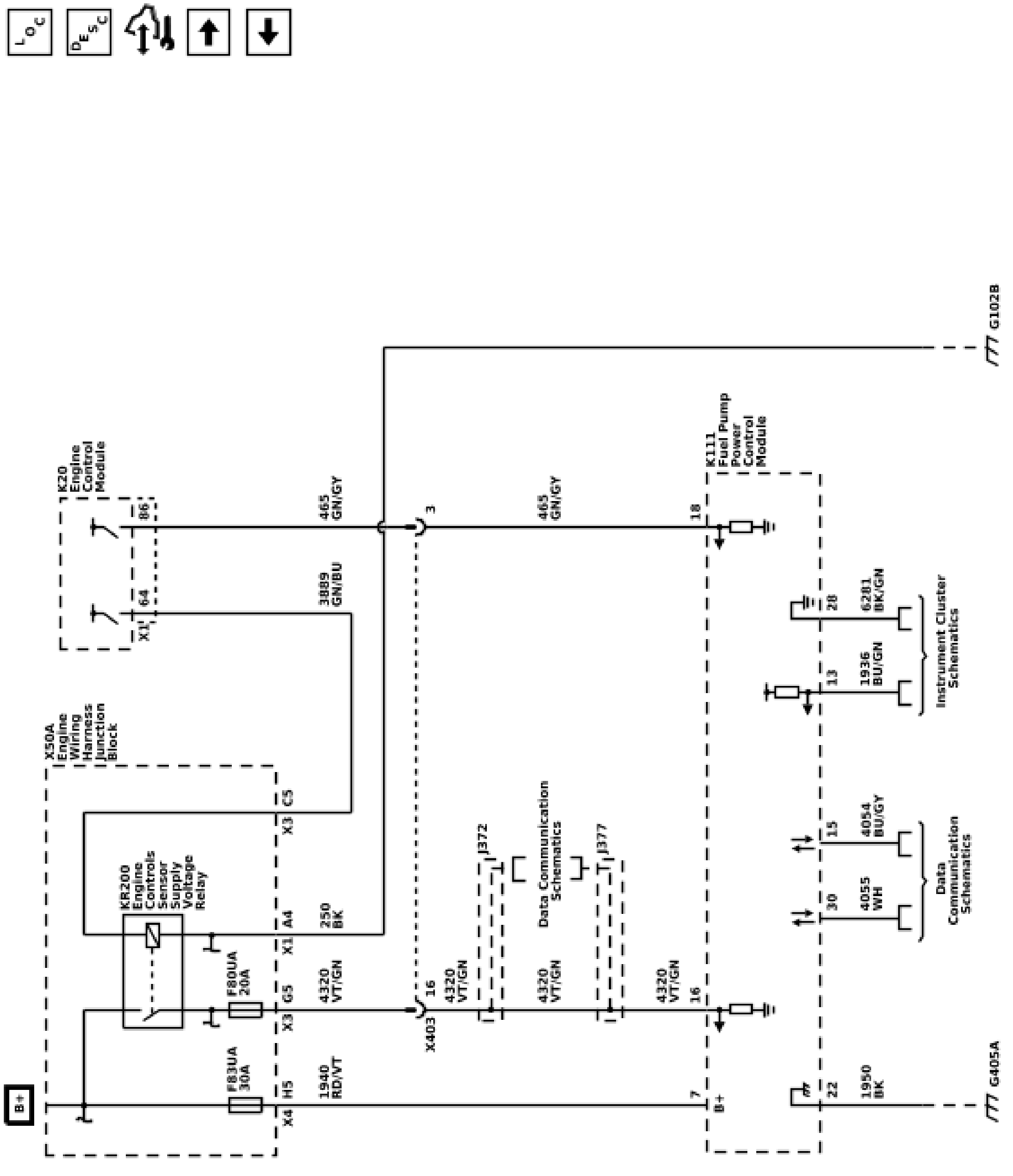
6885535

## Engine Controls Schematics (Engine Data Sensors - Exhaust, Turbo, and Intake Manifold Actuators)

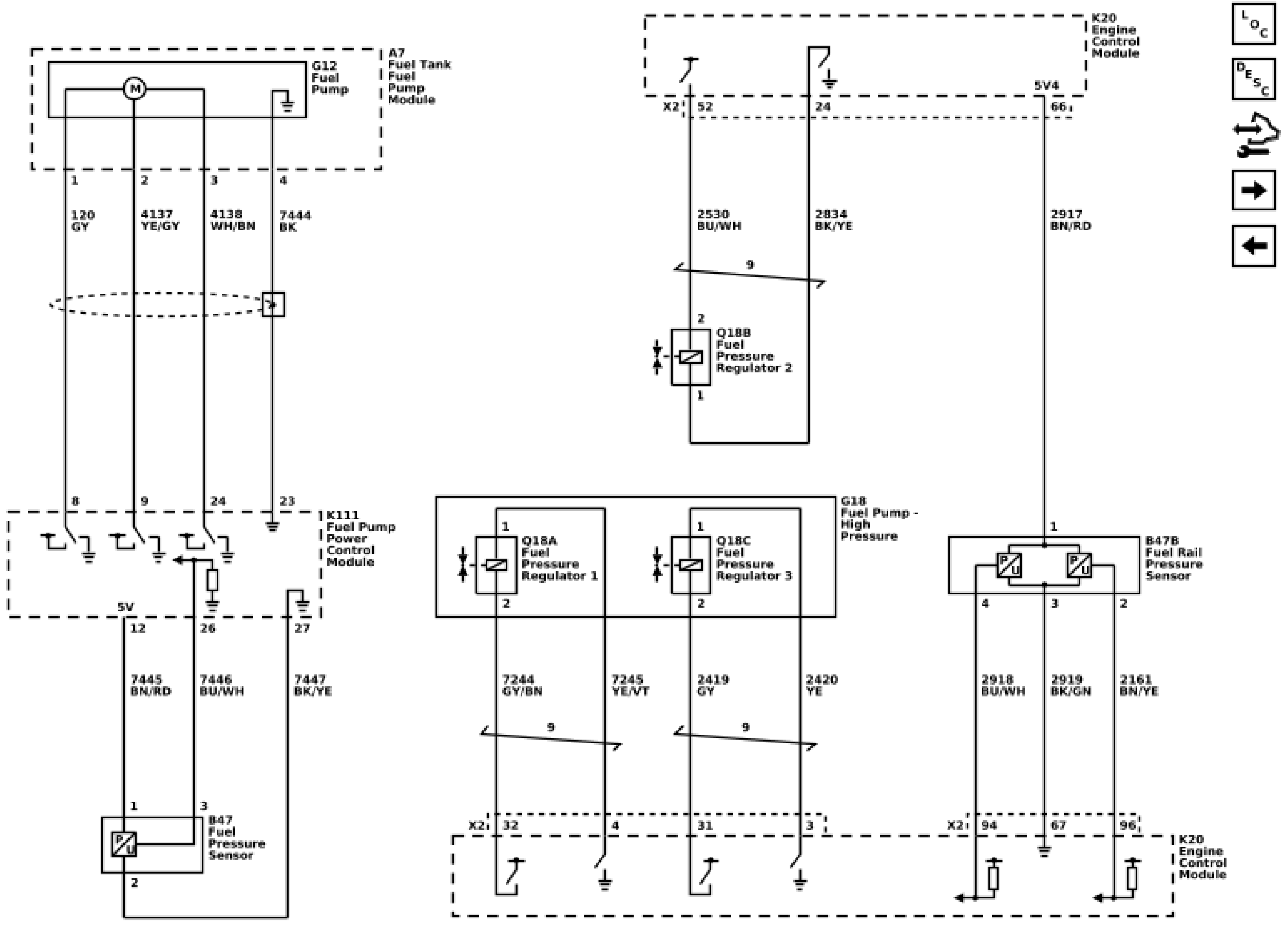

M122 Exhaust Pressure Regulator Valve
Q22 Intake Manifold Tuning Solenoid Valve
M103 Turbocharger Vane Position Actuator
A90 Logic
A90 Logic
M
M
M
1
2
5
4
3
3
2
1
5
4
4
2
3
1
5
1420 YE/BN
1421 BN
460 BU/RD
4305 BN/GN
548 BK/YE
X403
12
15
10
4
7
460 BU/RD
548 BK/YE
460 BU/RD
7316 GN/GY
548 BK/YE
480 WH/RD
580 BK/GN
J151
J183
J169
460 BU/RD
548 BK/YE
480 WH/RD
J170
J149
J150
1420 YE/BN
1421 BN
460 BU/RD
4305 BN/GN
7316 GN/GY
548 BK/YE
1389 BK/GN
1408 BK/BU
480 WH/RD
5947 VT/YE
580 BK/GN
1313 WH/BN
1330 GY/BK
X1
67
66
70
15
12
X2
75
56
55
X1
48
34
19
22
21
5V1
5V2
K20 Engine Control Module

6885536

## Engine Controls Schematics (Fuel Pump Power Control Module Power, Ground, and Subsystem References)

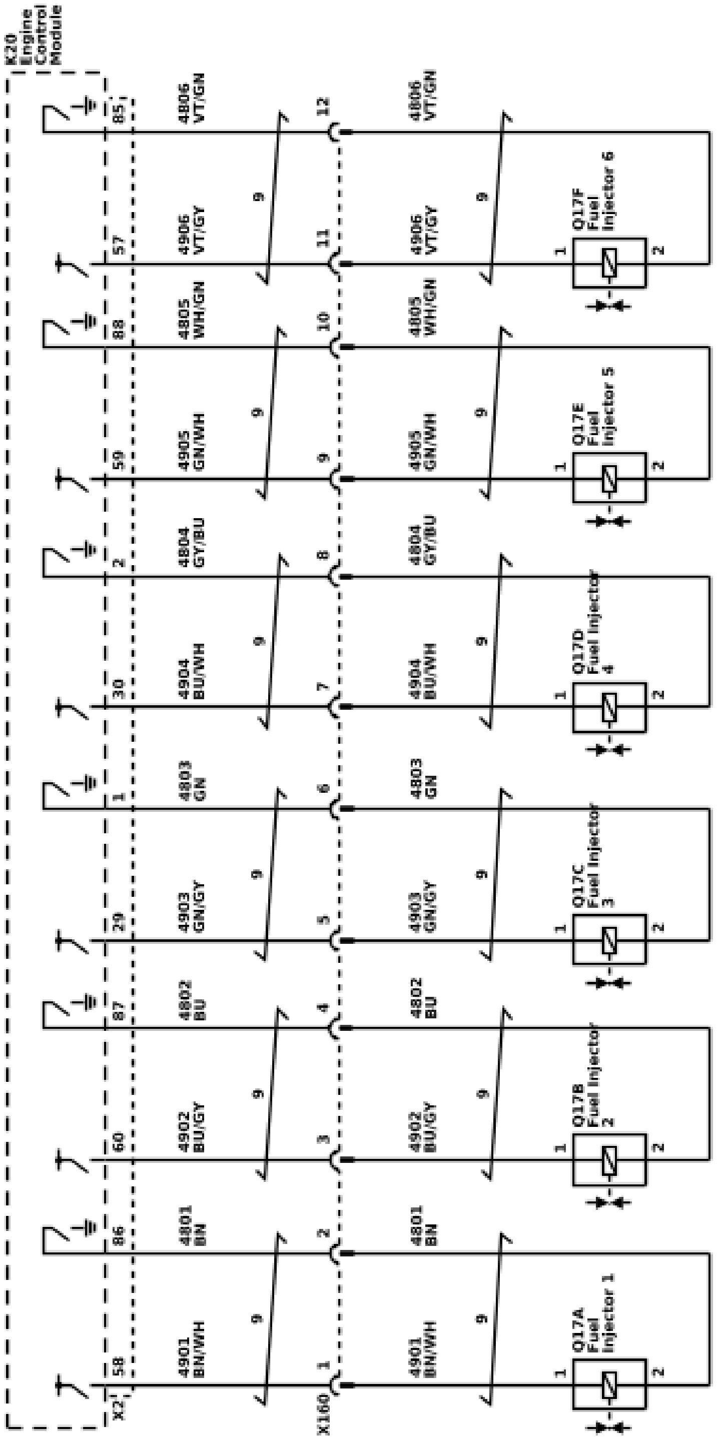

6885537
B+
X50A Engine Wiring Harness Junction Block
KR200 Engine Controls Sensor Supply Voltage Relay
F83UA 30A
F80UA 20A
X4 H5
X3 G5
X1 A4
X3 C5
1940 RD/VT
4320 VT/GN
250 BK
3889 GN/BU
K20 Engine Control Module
X1 64
86
465 GN/GY
3
X403 16
J372
J377
Data Communication Schematics
K111 Fuel Pump Power Control Module
7
B+
16
18
22
1950 BK
30
4055 WH
15
4054 BU/GY
13
1936 BU/GN
28
6281 BK/GN
Data Communication Schematics
Instrument Cluster Schematics
G405A
G102B

## Engine Controls Schematics (Fuel Controls - Low Pressure and High Pressure)

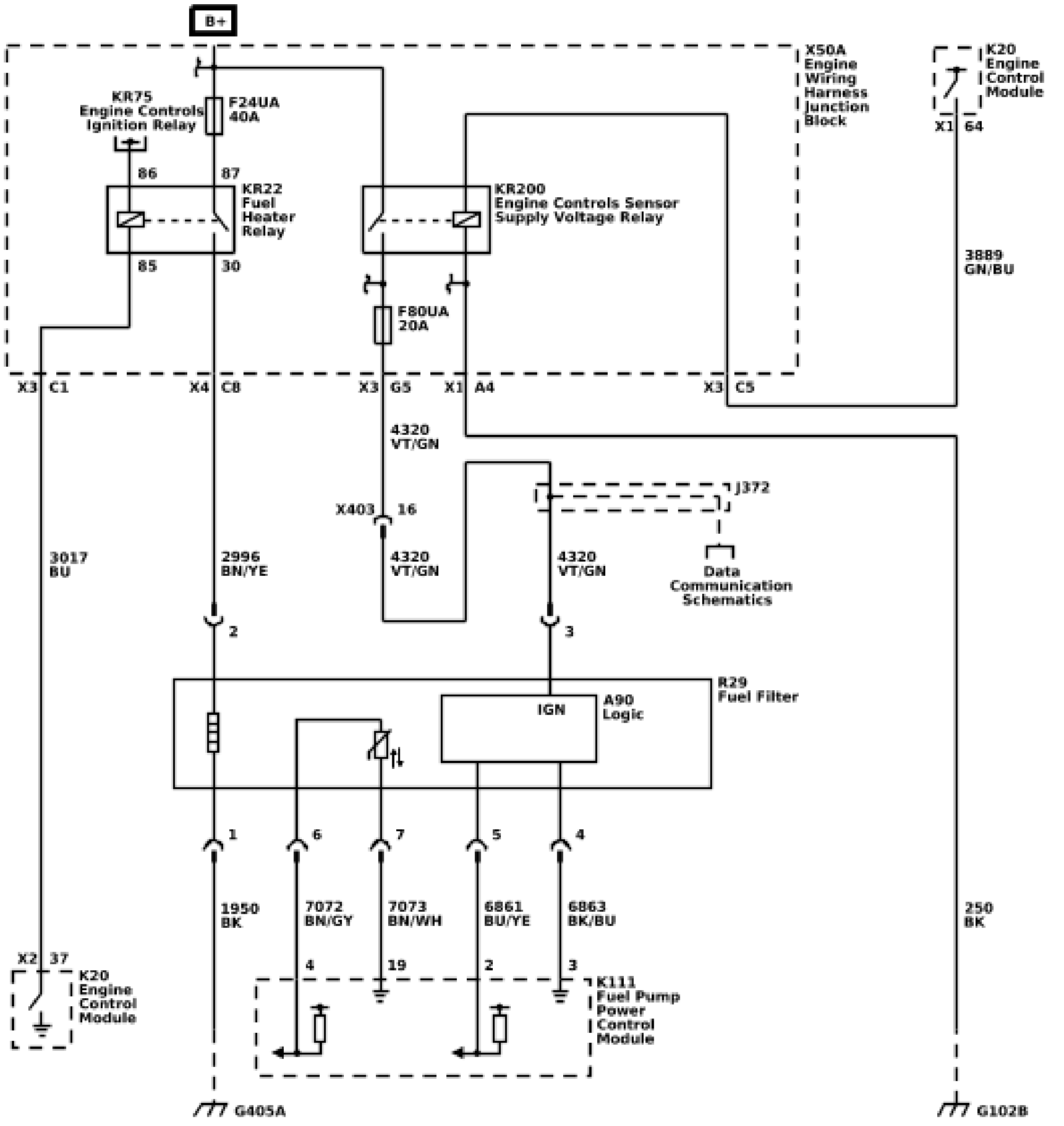

A7
Fuel Tank
Fuel
Pump
Module
G12
Fuel
Pump
M
1
2
3
4
120
GY
4137
YE/GY
4138
WH/BN
7444
BK
8
9
24
23
K111
Fuel Pump
Power
Control
Module
5V
12
26
27
7445
BN/RD
7446
BU/WH
7447
BK/YE
1
3
B47
Fuel
Pressure
Sensor
2
K20
Engine
Control
Module
X2
52
24
5V4
66
2530
BU/WH
2834
BK/YE
2917
BN/RD
9
2
Q18B
Fuel
Pressure
Regulator 2
1
G18
Fuel Pump -
High
Pressure
1
Q18A
Fuel
Pressure
Regulator 1
2
1
Q18C
Fuel
Pressure
Regulator 3
2
1
B47B
Fuel Rail
Pressure
Sensor
4
3
2
7244
GY/BN
7245
YE/VT
2419
GY
2420
YE
2918
BU/WH
2919
BK/GN
2161
BN/YE
9
9
X2
32
4
31
3
X2
94
67
96
K20
Engine
Control
Module
L O C
D E S C
6885538

## Engine Controls Schematics (Fuel Controls - Fuel Injectors)

6885539

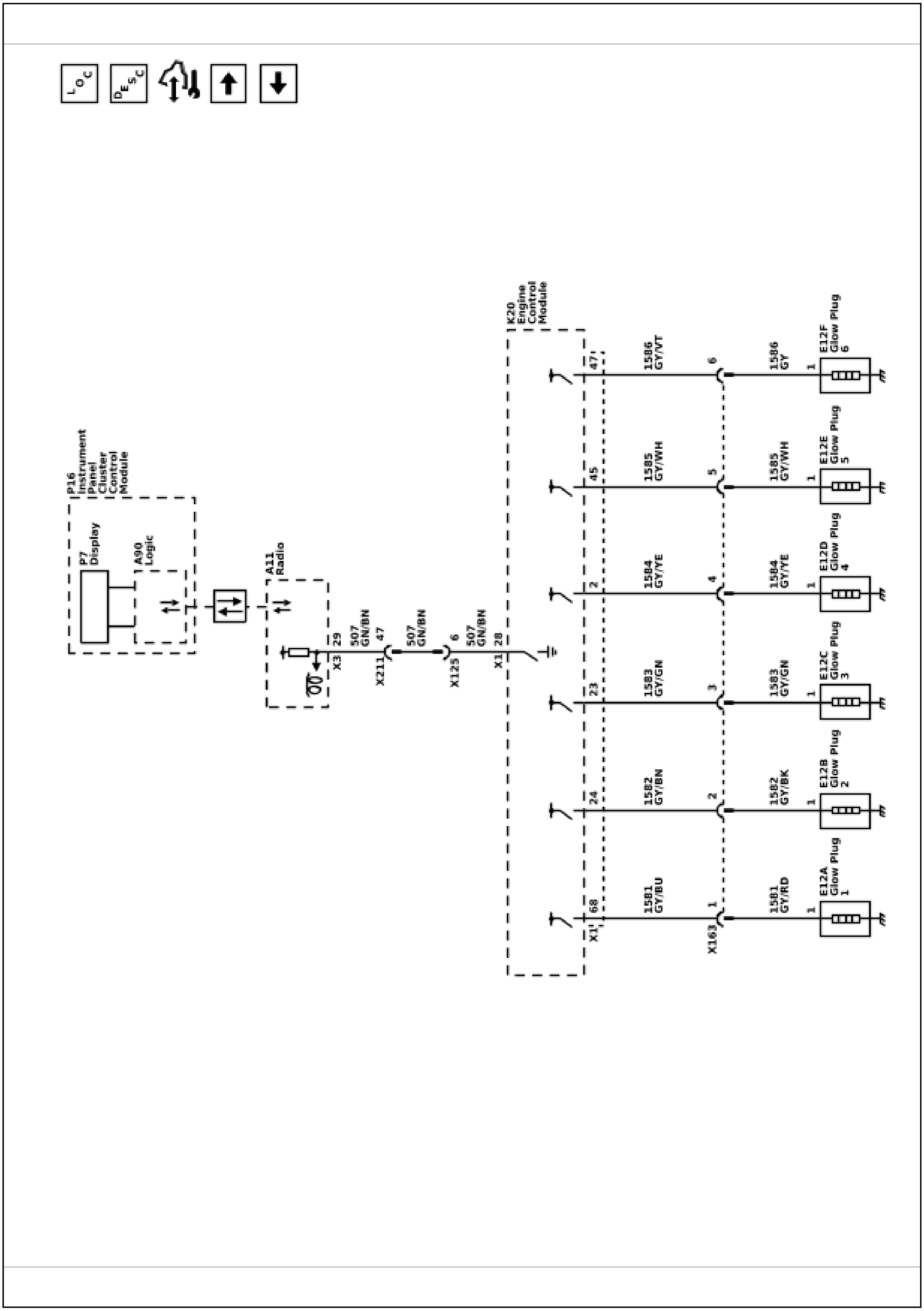

K20 Engine Control Module
X2
58
86
60
87
29
1
30
2
59
88
57
85
4901 BN/WH
4801 BN
4902 BU/GY
4802 BU
4903 GN/GY
4803 GN
4904 BU/WH
4804 GY/BU
4905 GN/WH
4805 WH/GN
4906 VT/GY
4806 VT/GN
9
X160
1
2
3
4
5
6
7
8
9
10
11
12
Q17A Fuel Injector 1
Q17B Fuel Injector 2
Q17C Fuel Injector 3
Q17D Fuel Injector 4
Q17E Fuel Injector 5
Q17F Fuel Injector 6
1
2

## Engine Controls Schematics (Fuel Controls - Fuel Filter)

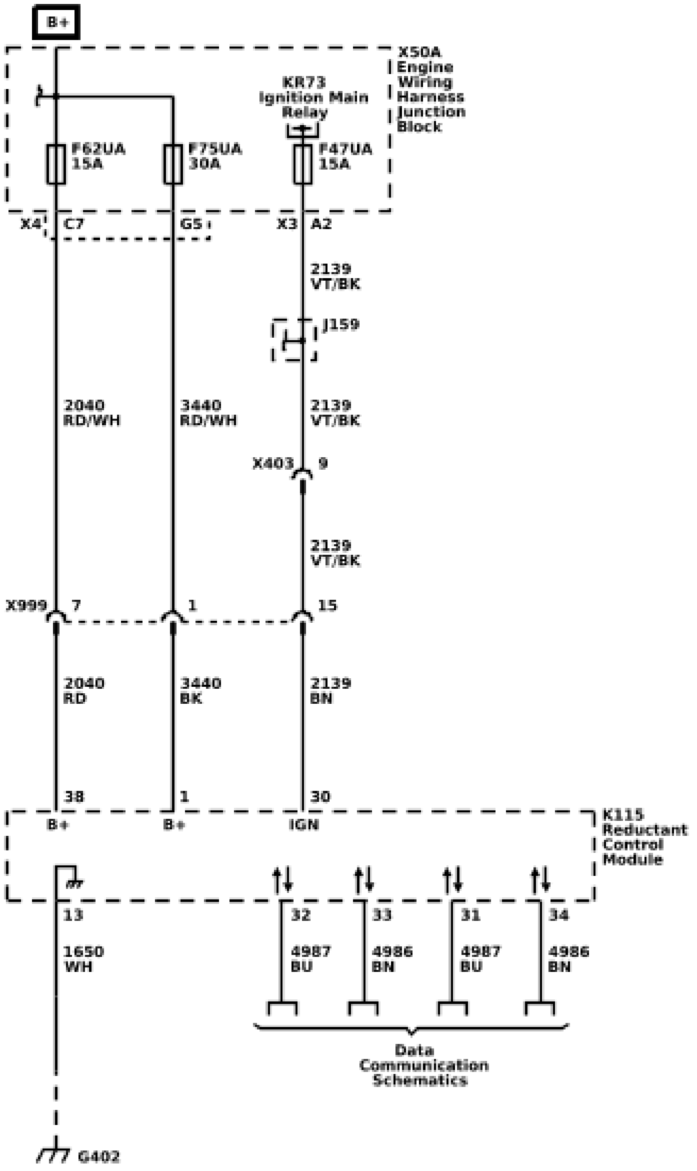

B+
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F24UA 40A
86
87
KR22 Fuel Heater Relay
85
30
KR200 Engine Controls Sensor Supply Voltage Relay
F80UA 20A
K20 Engine Control Module
X1 64
3889 GN/BU
X3 C1
X4 C8
X3 G5
X1 A4
X3 C5
4320 VT/GN
X403 16
J372
3017 BU
2996 BN/YE
4320 VT/GN
4320 VT/GN
Data Communication Schematics
2
3
R29 Fuel Filter
A90 Logic
IGN
1
6
7
5
4
1950 BK
7072 BN/GY
7073 BN/WH
6861 BU/YE
6863 BK/BU
250 BK
X2 37
K20 Engine Control Module
4
19
2
3
K111 Fuel Pump Power Control Module
G405A
G102B

6885540

## Engine Controls Schematics (Glow Plugs)

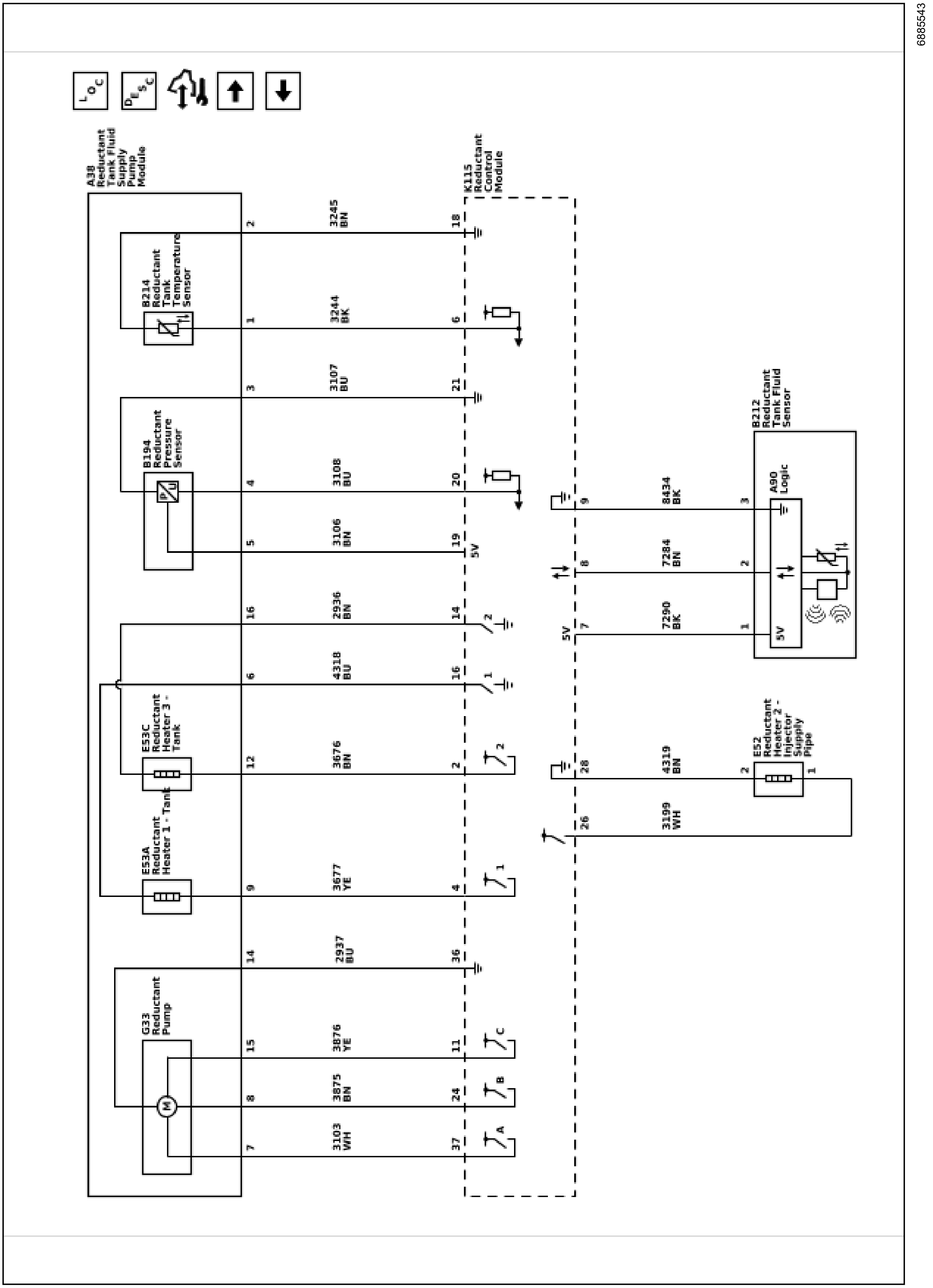

6885541
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
A11 Radio
X3 29
507 GN/BN
X211 47
507 GN/BN
X125 6
507 GN/BN
X1 28
K20 Engine Control Module
X1 68
1581 GY/BU
X163 1
1581 GY/RD
1
E12A Glow Plug 1
24
1582 GY/BN
2
1582 GY/BK
1
E12B Glow Plug 2
23
1583 GY/GN
3
1583 GY/GN
1
E12C Glow Plug 3
2
1584 GY/YE
4
1584 GY/YE
1
E12D Glow Plug 4
45
1585 GY/WH
5
1585 GY/WH
1
E12E Glow Plug 5
47
1586 GY/VT
6
1586 GY
1
E12F Glow Plug 6

## Engine Controls Schematics (Reductant Controls - Module Power, Ground, and Serial Data)

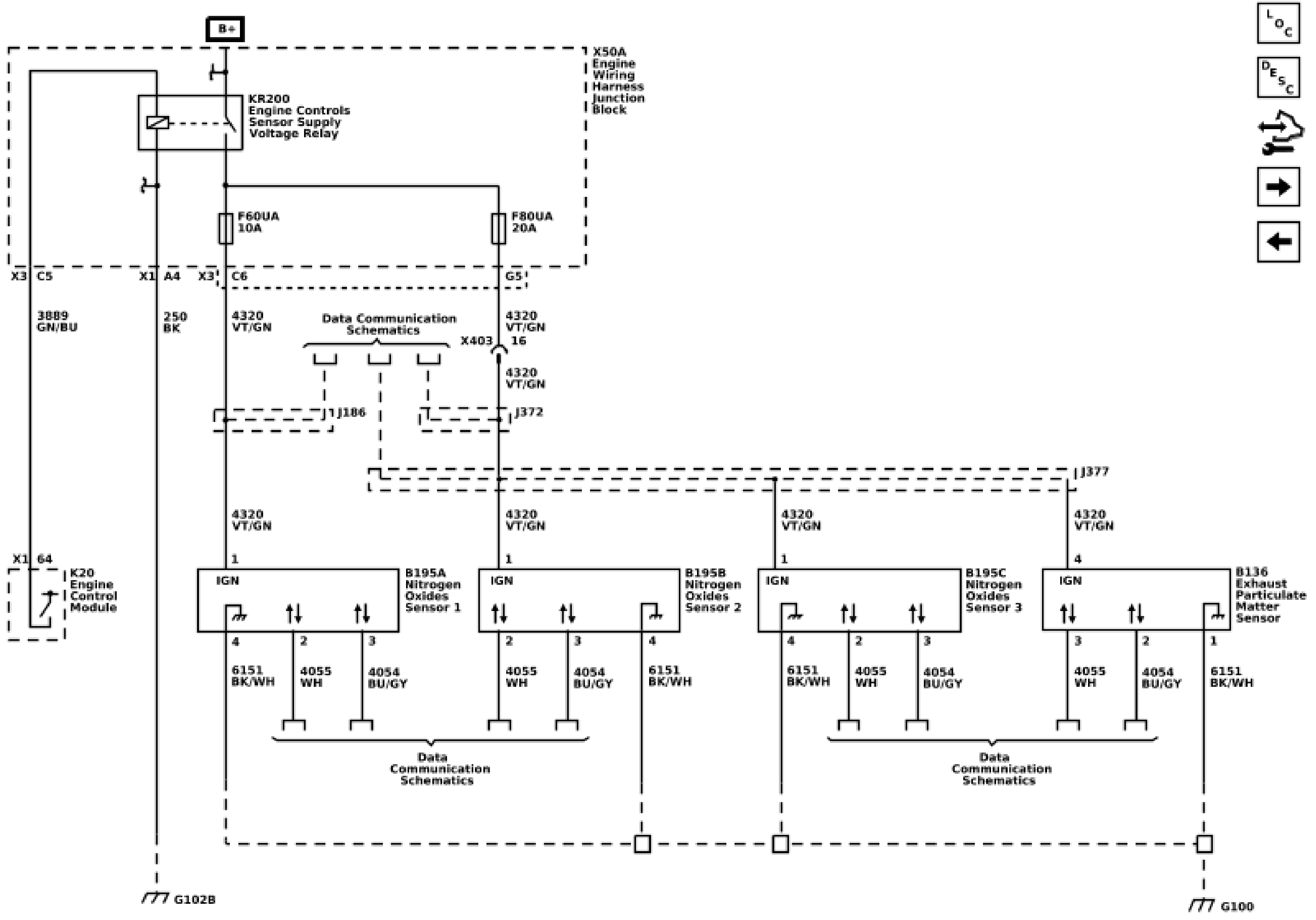

B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F62UA 15A
F75UA 30A
F47UA 15A
X4
C7
G5
X3
A2
2139 VT/BK
J159
2040 RD/WH
3440 RD/WH
2139 VT/BK
X403
9
2139 VT/BK
X999
7
1
15
2040 RD
3440 BK
2139 BN
38
1
30
B+
B+
IGN
K115 Reductant Control Module
13
32
33
31
34
1650 WH
4987 BU
4986 BN
4987 BU
4986 BN
Data Communication Schematics
G402

6885542

## Engine Controls Schematics (Reductant Controls - Reductant Tank Fluid Supply Pump Module, Line Heater, and Reductant Tank Fluid Sensor)

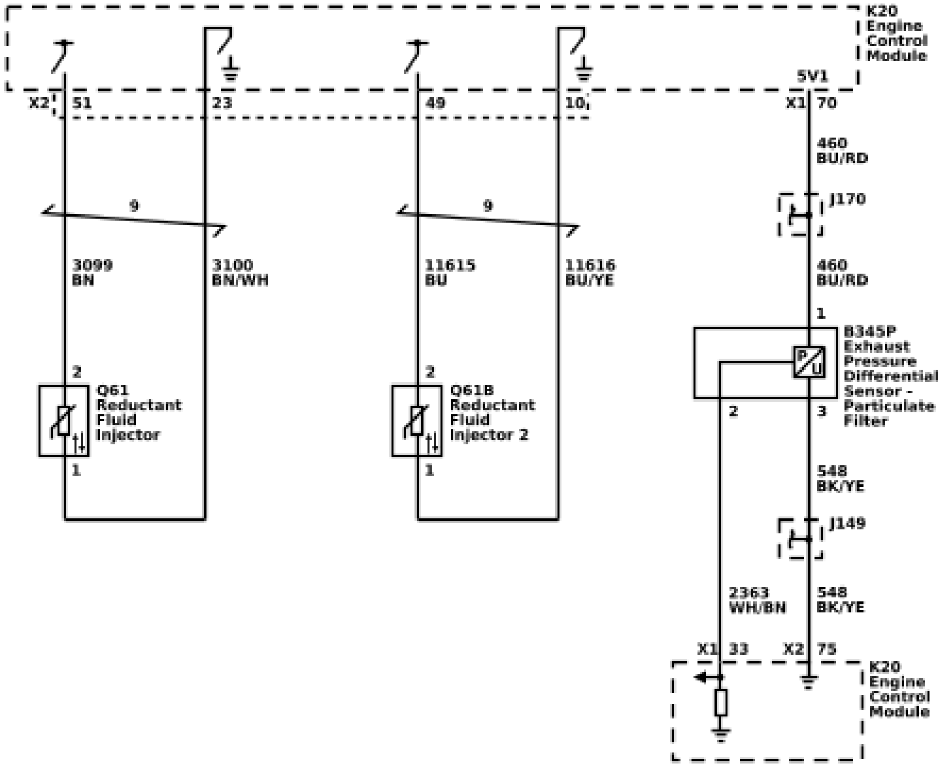

6885543
LOC
DESC
A38 Reductant Tank Fluid Supply Pump Module
K115 Reductant Control Module
B214 Reductant Tank Temperature Sensor
B194 Reductant Pressure Sensor
E53C Reductant Heater 3 - Tank
E53A Reductant Heater 1 - Tank
G33 Reductant Pump
M
B212 Reductant Tank Fluid Sensor
A90 Logic
E52 Reductant Heater 2 - Injector Supply Pipe
2 3245 BN 18
1 3244 BK 6
3 3107 BU 21
4 3108 BU 20
5 3106 BN 19 5V
16 2936 BN 14 2
6 4318 BU 16 1
12 3676 BN 2 2
9 3677 YE 4 1
14 2937 BU 36
15 3876 YE 11 C
8 3875 BN 24 B
7 3103 WH 37 A
9 8434 BK 3
8 7284 BN 2
5V 7 7290 BK 1 5V
28 4319 BN 2
26 3199 WH 1

## Engine Controls Schematics (Reductant Controls - Nitrogen Oxide Sensors and Exhaust Particulate Matter Sensor)


B+
X50A Engine Wiring Harness Junction Block
KR200 Engine Controls Sensor Supply Voltage Relay
F60UA 10A
F80UA 20A
X3 C5
X1 A4
X3 C6
G5
3889 GN/BU
250 BK
4320 VT/GN
Data Communication Schematics
4320 VT/GN
X403 16
4320 VT/GN
J186
J372
J377
4320 VT/GN
4320 VT/GN
4320 VT/GN
4320 VT/GN
X1 64
K20 Engine Control Module
1
IGN
B195A Nitrogen Oxides Sensor 1
4
2
3
6151 BK/WH
4055 WH
4054 BU/GY
1
IGN
B195B Nitrogen Oxides Sensor 2
2
3
4
4055 WH
4054 BU/GY
6151 BK/WH
1
IGN
B195C Nitrogen Oxides Sensor 3
4
2
3
6151 BK/WH
4055 WH
4054 BU/GY
4
IGN
B136 Exhaust Particulate Matter Sensor
3
2
1
4055 WH
4054 BU/GY
6151 BK/WH
Data Communication Schematics
Data Communication Schematics
G102B
G100

6885544

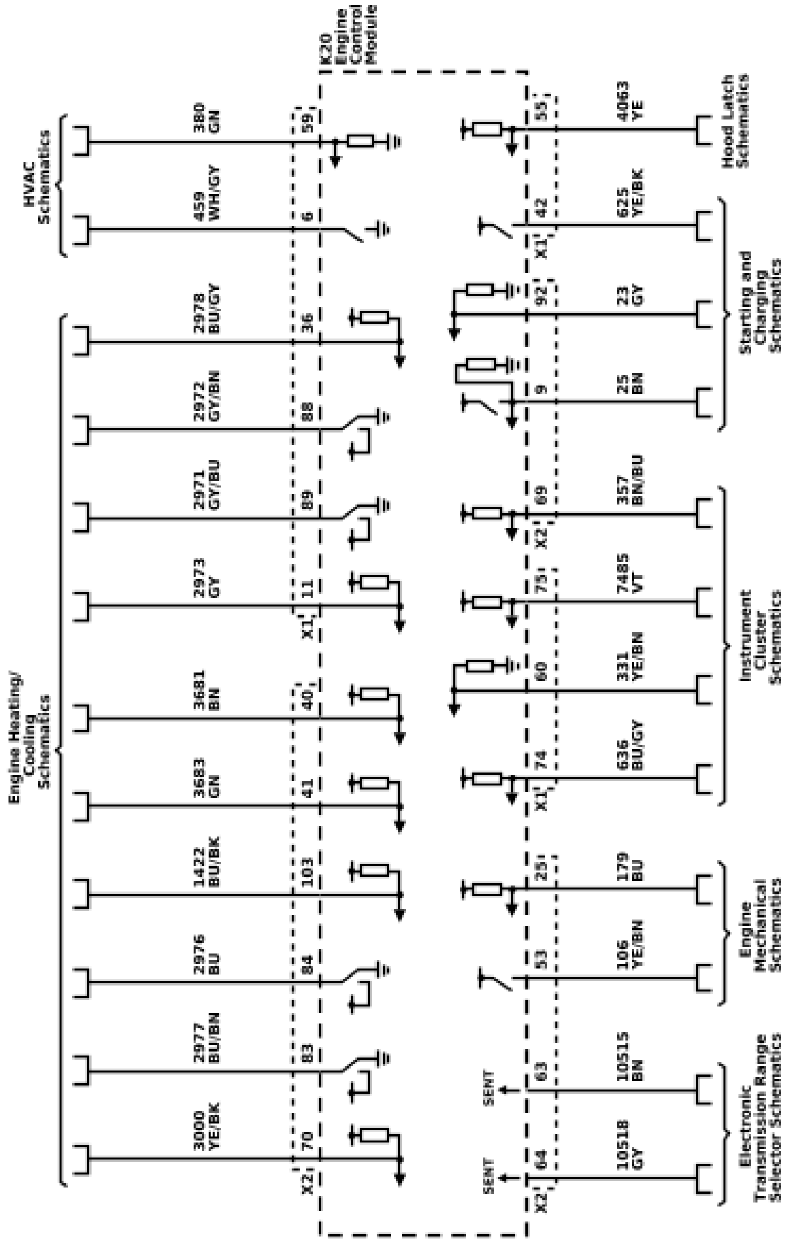
## Engine Controls Schematics (Reductant Controls - Reductant Fluid Injector and Particulate Filter Pressure Sensor)


K20
Engine
Control
Module
5V1
X2
51
23
49
10
X1
70
9
9
460
BU/RD
J170
460
BU/RD
3099
BN
3100
BN/WH
11615
BU
11616
BU/YE
1
B345P
Exhaust
Pressure
Differential
Sensor -
Particulate
Filter
P
U
2
3
2
Q61
Reductant
Fluid
Injector
1
2
Q61B
Reductant
Fluid
Injector 2
1
548
BK/YE
J149
2363
WH/BN
548
BK/YE
X1
33
X2
75
K20
Engine
Control
Module

6885545

## Engine Controls Schematics (Controlled/Monitored Subsystem References)

6885546


K20 Engine Control Module
HVAC Schematics
380 GN
59
459 WH/GY
6
Engine Heating/ Cooling Schematics
2978 BU/GY
36
2972 GY/BN
88
2971 GY/BU
89
2973 GY
11
X1
3681 BN
40
3683 GN
41
1422 BU/BK
103
2976 BU
84
2977 BU/BN
83
3000 YE/BK
70
X2
4063 YE
55
Hood Latch Schematics
625 YE/BK
42
X1
23 GY
92
25 BN
9
Starting and Charging Schematics
357 BN/BU
69
X2
7485 VT
75
331 YE/BN
60
636 BU/GY
74
X1
Instrument Cluster Schematics
179 BU
25
106 YE/BN
53
Engine Mechanical Schematics
10515 BN
63
SENT
10518 GY
64
SENT
X2
Electronic Transmission Range Selector Schematics

# Description and Operation

## Inspection/Maintenance Description and Operation

Some state/provincial and local governments require that a vehicle pass on-board diagnostic (OBD) system tests and the Inspection/Maintenance (I/M) emission inspection in order to renew license plates. This is accomplished by viewing the I/M System monitors on a scan tool and confirming that no Permanent DTCs are set.

The OBD II system monitors all emission control systems that are on-board. The OBD II regulations require monitoring of the following:

| Monitor | Diesel | Gasoline |
|---|---|---|
| Boost System Monitor - Since Diagnostic Trouble Codes Cleared | X | — |
| Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Evaporative Emission Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Exhaust Aftertreatment Monitor - Since Diagnostic Trouble Codes Cleared | X | — |
| Exhaust Gas Recirculation Valve/Camshaft Position Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Exhaust Gas Sensor Monitor - Since Diagnostic Trouble Codes Cleared | X | — |
| Fuel System Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Heated Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Misfire Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Oxygen Sensor Heater Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Oxygen Sensor/Heated Oxygen Sensor Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared | X | X |

### I/M System Status

Each system monitor requires at least one, and sometimes several diagnostic tests. The result of each test is reported by a DTC. A system monitor is Complete when either all of the DTCs comprising the monitor have run and passed, or when any one of the DTCs comprising the monitor has illuminated the malfunction indicator lamp (MIL). For example, when the Oxygen Sensor Heater Monitor indicates Complete, all of the oxygen sensor heaters have been diagnosed. If the vehicle has 4 heated oxygen sensors, all 4 heaters have been diagnosed.

Once the system monitor is complete, the I/M System Status parameter will display Complete in the value column of the scan tool. Any monitor that is not applicable to a vehicle will display Not Supported in the scan tool value column. The I/M System Status parameter will display Incomplete in the value column when any of the required tests for that system have not run. The following is a list of conditions that would set the I/M System Status monitor to Incomplete:

- The vehicle is new from the factory and has not yet been driven through the necessary drive conditions to complete the tests.
- The battery has been disconnected or discharged below operating voltage.
- The control module power or ground has been interrupted.
- The control module has been programmed.
- The control module DTCs have been cleared.

### Permanent DTCs

Permanent DTCs are defined as confirmed fault codes that are currently commanding the MIL on and stored in non-volatile memory. Permanent DTCs cannot be erased by any scan tool command or by disconnecting power to the controller.

The intended use of this data is to prevent vehicles from passing an I/M inspection by disconnecting the battery or clearing codes with a scan tool prior to the inspection. The presence of Permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the OBD II system.

Only the OBD II system can clear Permanent DTCs. The OBD II system must determine that the malfunction that caused the Permanent DTC to be stored no longer exists and is not commanding the MIL.

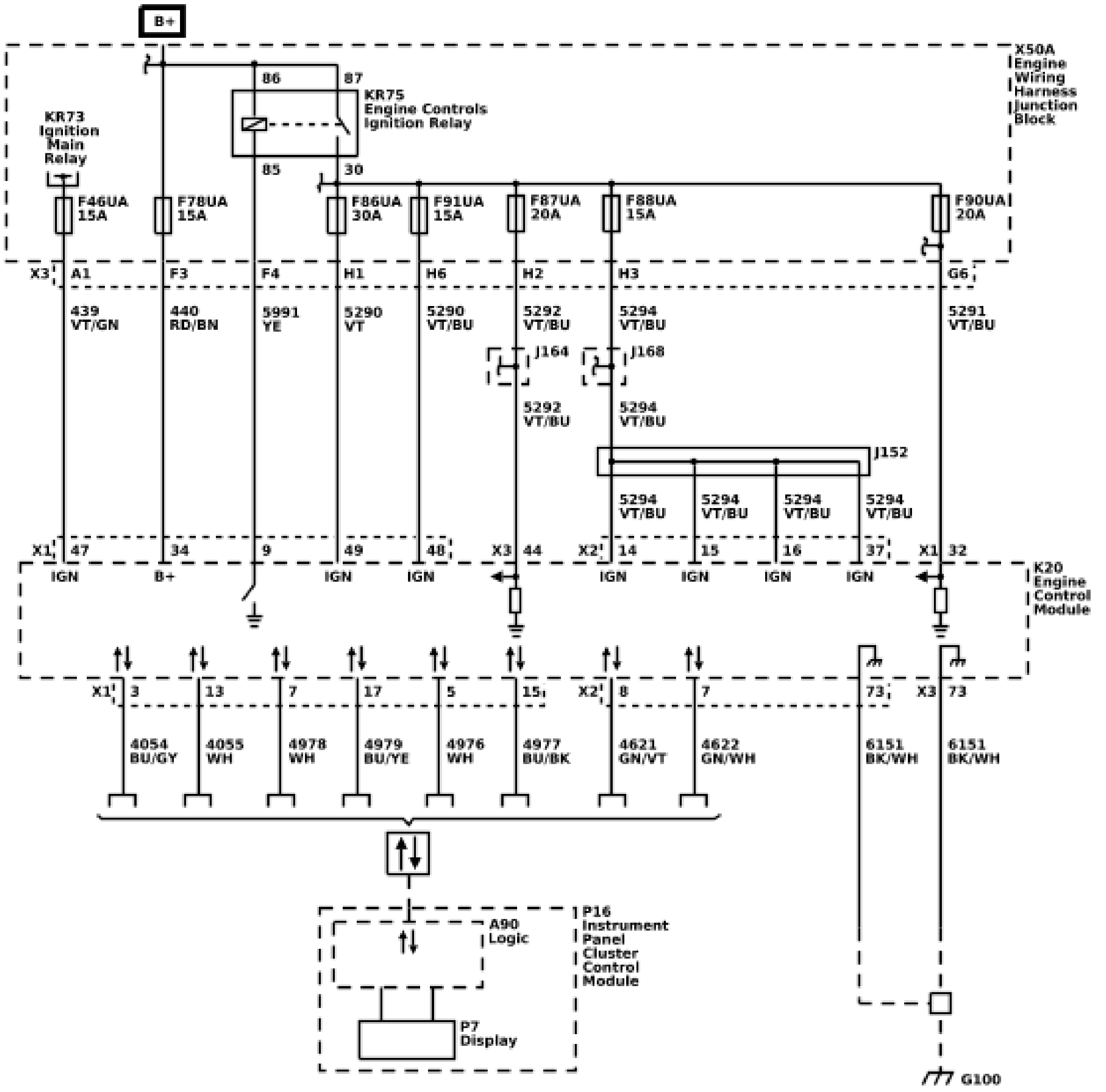
- If the MIL goes out naturally due to 3 passing drive cycles (scan tool code clear is not used), then the Permanent DTC is cleared at power down of the last drive cycle.
- If a scan tool code clear is used to turn off the MIL then the Permanent DTC is not cleared, the DTC must PASS and not FAIL. The Permanent DTC is cleared at power down of the drive cycle.

- If the controller is programmed, all Permanent DTCs are cleared.

# Engine Controls and Fuel - 5.3L or 6.2L

## Schematic and Routing Diagrams

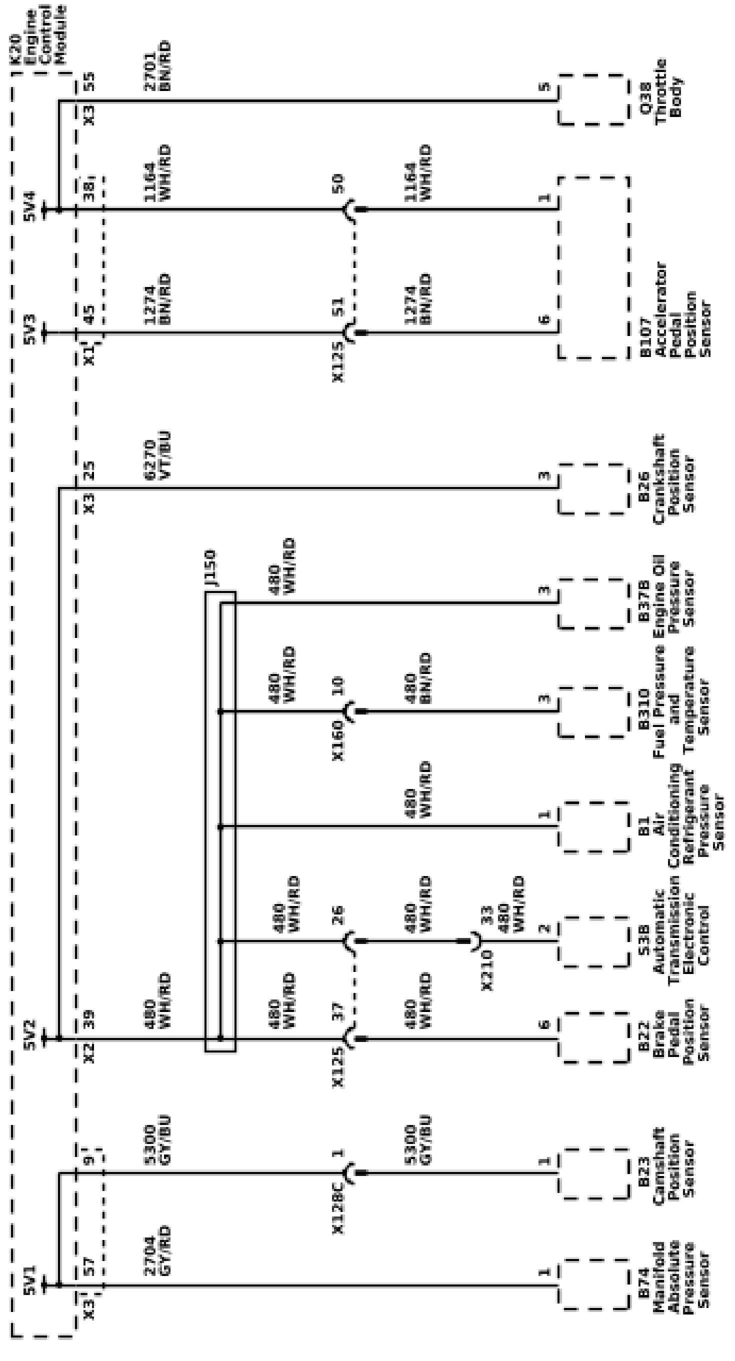
## Engine Controls Schematics (Engine Control Module Power, Ground, Serial Data, and MIL)


B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
86
87
KR75 Engine Controls Ignition Relay
85
30
F46UA 15A
F78UA 15A
F86UA 30A
F91UA 15A
F87UA 20A
F88UA 15A
F90UA 20A
X3
A1
F3
F4
H1
H6
H2
H3
G6
439 VT/GN
440 RD/BN
5991 YE
5290 VT
5290 VT/BU
5292 VT/BU
5294 VT/BU
5291 VT/BU
J164
J168
5292 VT/BU
5294 VT/BU
J152
5294 VT/BU
5294 VT/BU
5294 VT/BU
5294 VT/BU
X1
47
34
9
49
48
X3
44
X2
14
15
16
37
X1
32
IGN
B+
IGN
IGN
IGN
IGN
IGN
IGN
K20 Engine Control Module
X1
3
13
7
17
5
15
X2
8
7
73
X3
73
4054 BU/GY
4055 WH
4978 WH
4979 BU/YE
4976 WH
4977 BU/BK
4621 GN/VT
4622 GN/WH
6151 BK/WH
6151 BK/WH
A90 Logic
P16 Instrument Panel Cluster Control Module
P7 Display
G100

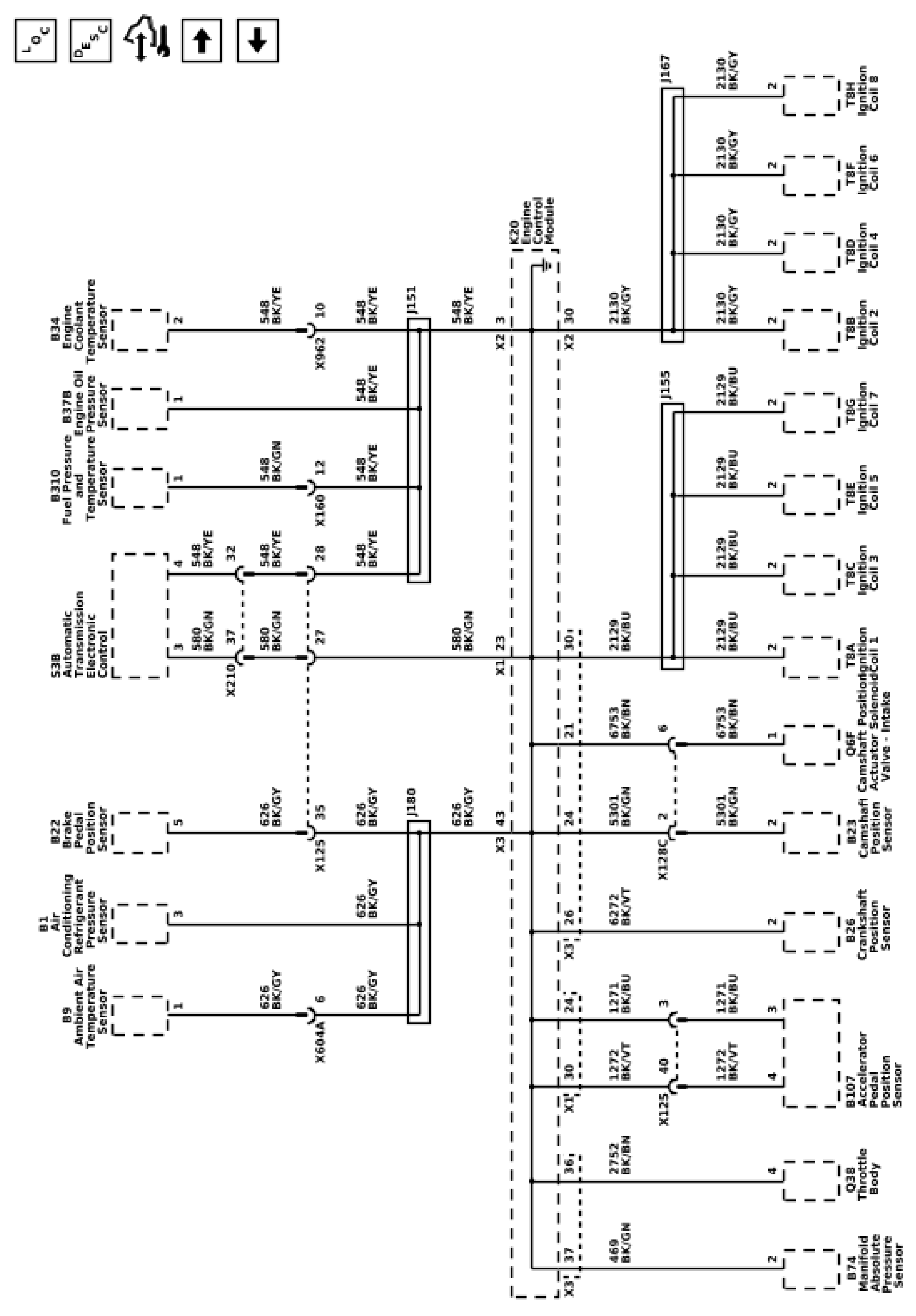
6885548

## Engine Controls Schematics (5V Reference Bus)

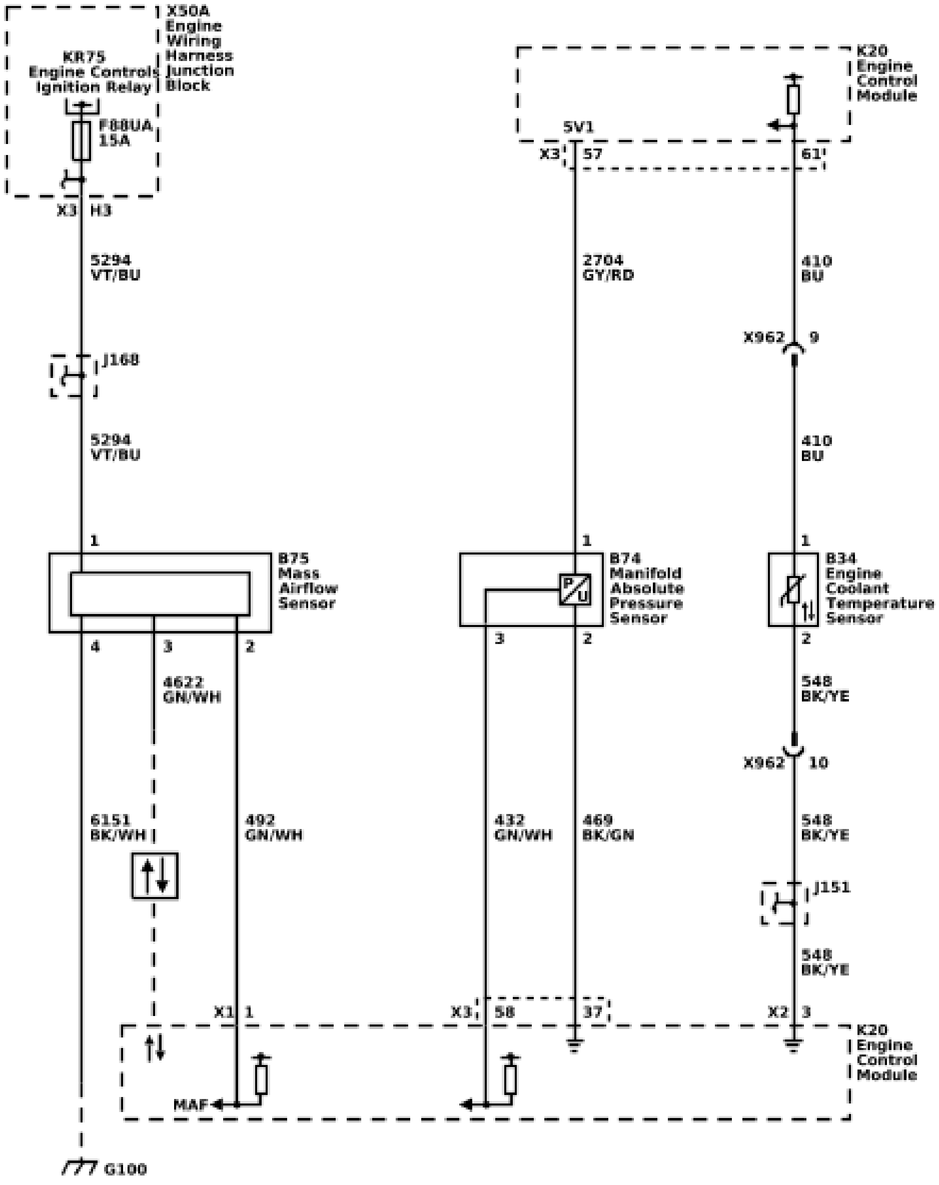
6885549


K20 Engine Control Module
5V4
5V3
5V2
5V1
X3 55 2701 BN/RD
38 1164 WH/RD
X1 45 1274 BN/RD
X3 25 6270 VT/BU
X2 39 480 WH/RD
9 5300 GY/BU
X3 57 2704 GY/RD
J150
480 WH/RD
50 1164 WH/RD
51 1274 BN/RD
X125
10 480 BN/RD
X160
26 480 WH/RD
33 480 WH/RD
X210
37 480 WH/RD
X125
1 5300 GY/BU
X128C
5 Q38 Throttle Body
1
6 B107 Accelerator Pedal Position Sensor
3 B26 Crankshaft Position Sensor
3 B37B Engine Oil Pressure Sensor
3 B310 Fuel Pressure and Temperature Sensor
1 B1 Air Conditioning Refrigerant Pressure Sensor
2 S38 Automatic Transmission Electronic Control
6 B22 Brake Pedal Position Sensor
1 B23 Camshaft Position Sensor
1 B74 Manifold Absolute Pressure Sensor

## Engine Controls Schematics (Low Reference Bus)

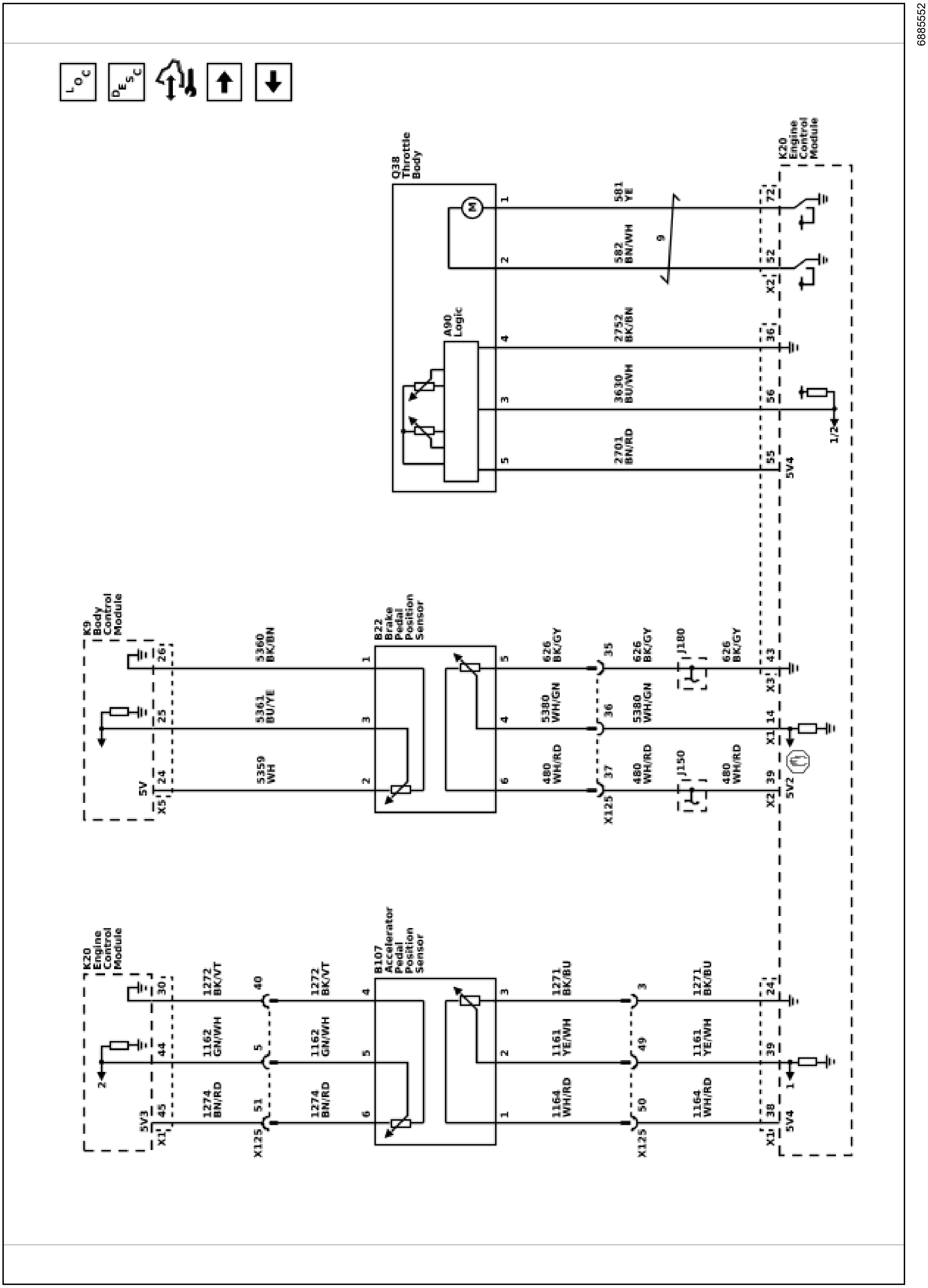

6885550
B34 Engine Coolant Temperature Sensor
B37B Engine Oil Pressure Sensor
B310 Fuel Pressure and Temperature Sensor
S38 Automatic Transmission Electronic Control
B22 Brake Pedal Position Sensor
B1 Air Conditioning Refrigerant Pressure Sensor
B9 Ambient Air Temperature Sensor
548 BK/YE
548 BK/GN
580 BK/GN
626 BK/GY
X962
X160
X210
X125
X604A
J151
J180
K20 Engine Control Module
X1
X2
X3
J167
J155
2130 BK/GY
2129 BK/BU
6753 BK/BN
5301 BK/GN
6272 BK/VT
1271 BK/BU
1272 BK/VT
2752 BK/BN
469 BK/GN
X128C
T8H Ignition Coil 8
T8F Ignition Coil 6
T8D Ignition Coil 4
T8B Ignition Coil 2
T8G Ignition Coil 7
T8E Ignition Coil 5
T8C Ignition Coil 3
T8A Ignition Coil 1
Q6F Camshaft Position Actuator Solenoid Valve - Intake
B23 Camshaft Position Sensor
B26 Crankshaft Position Sensor
B107 Accelerator Pedal Position Sensor
Q38 Throttle Body
B74 Manifold Absolute Pressure Sensor

## Engine Controls Schematics (Engine Data Sensors - Pressure and Temperature)

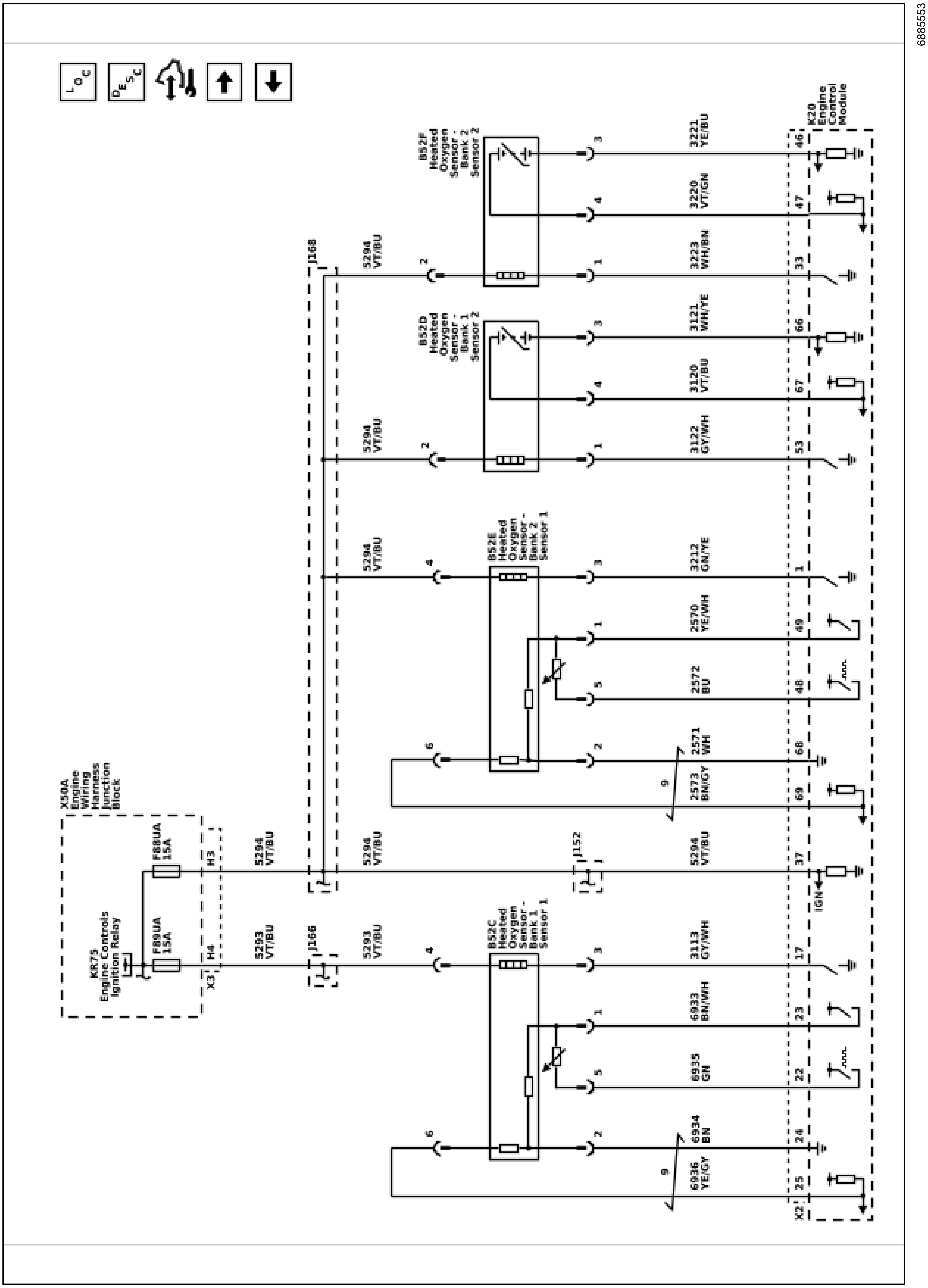

X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F88UA 15A
X3 H3
5294 VT/BU
J168
5294 VT/BU
1
B75 Mass Airflow Sensor
4
3
2
4622 GN/WH
6151 BK/WH
492 GN/WH
X1 1
MAF
G100
K20 Engine Control Module
5V1
X3 57
61
2704 GY/RD
410 BU
X962 9
410 BU
1
B74 Manifold Absolute Pressure Sensor
3
2
432 GN/WH
469 BK/GN
X3 58
37
1
B34 Engine Coolant Temperature Sensor
2
548 BK/YE
X962 10
548 BK/YE
J151
548 BK/YE
X2 3
K20 Engine Control Module

6885551

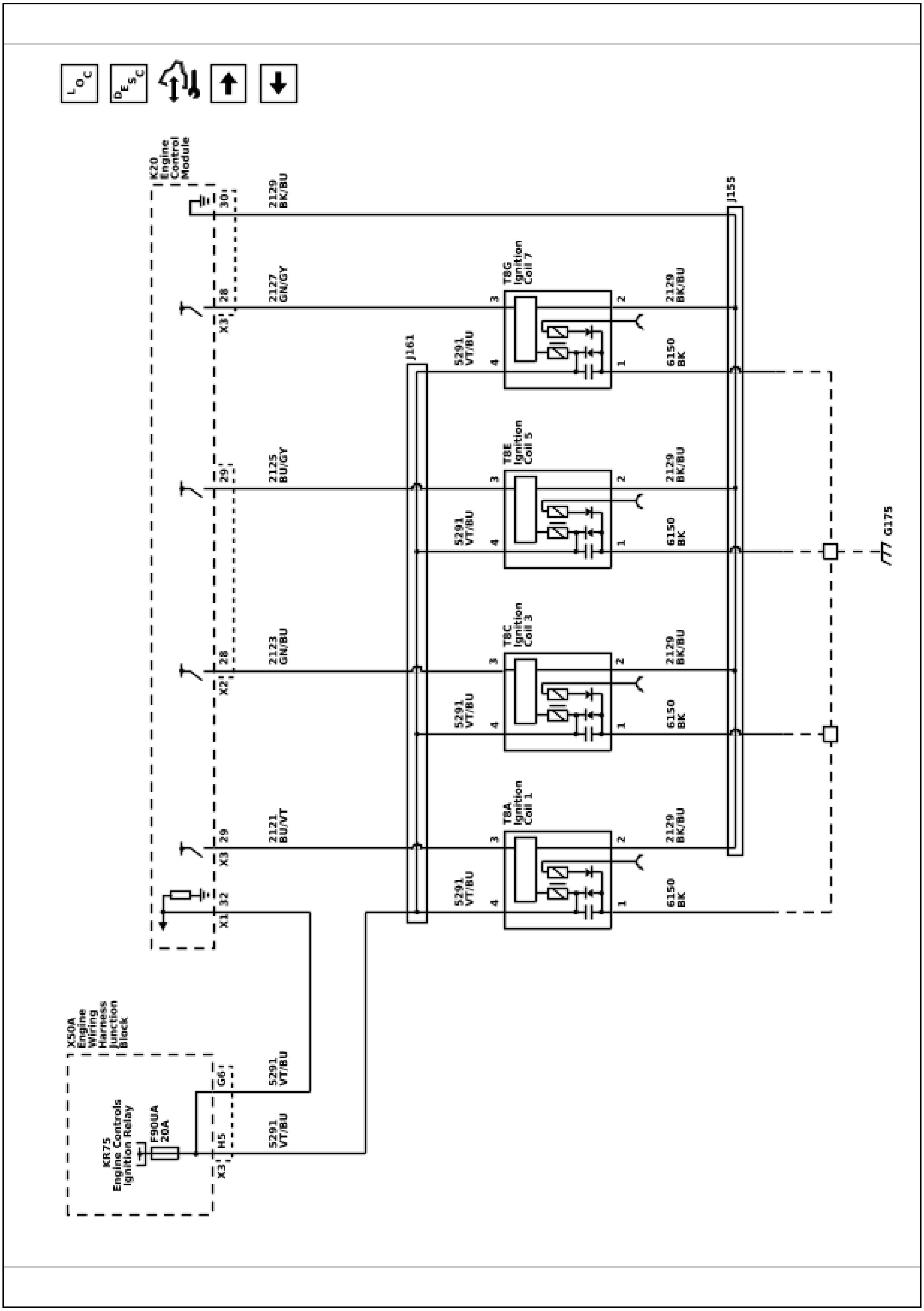
# Engine Controls Schematics (Engine Data Sensors - Throttle Controls and Override)


6885552
LOC
DESC
Q38 Throttle Body
M
A90 Logic
1
2
4
3
5
581 YE
582 BN/WH
2752 BK/BN
3630 BU/WH
2701 BN/RD
9
72
52
X2
36
56
55
5V4
1/2
K20 Engine Control Module
K9 Body Control Module
26
25
24
5V
X5
5360 BK/BN
5361 BU/YE
5359 WH
B22 Brake Pedal Position Sensor
1
3
2
5
4
6
626 BK/GY
5380 WH/GN
480 WH/RD
35
36
37
X125
J180
J150
43
X3
14
X1
39
X2
5V2
K20 Engine Control Module
30
44
45
5V3
X1
2
1272 BK/VT
1162 GN/WH
1274 BN/RD
40
5
51
X125
B107 Accelerator Pedal Position Sensor
4
5
6
3
2
1
1271 BK/BU
1161 YE/WH
1164 WH/RD
3
49
50
X125
24
39
38
X1
1
5V4

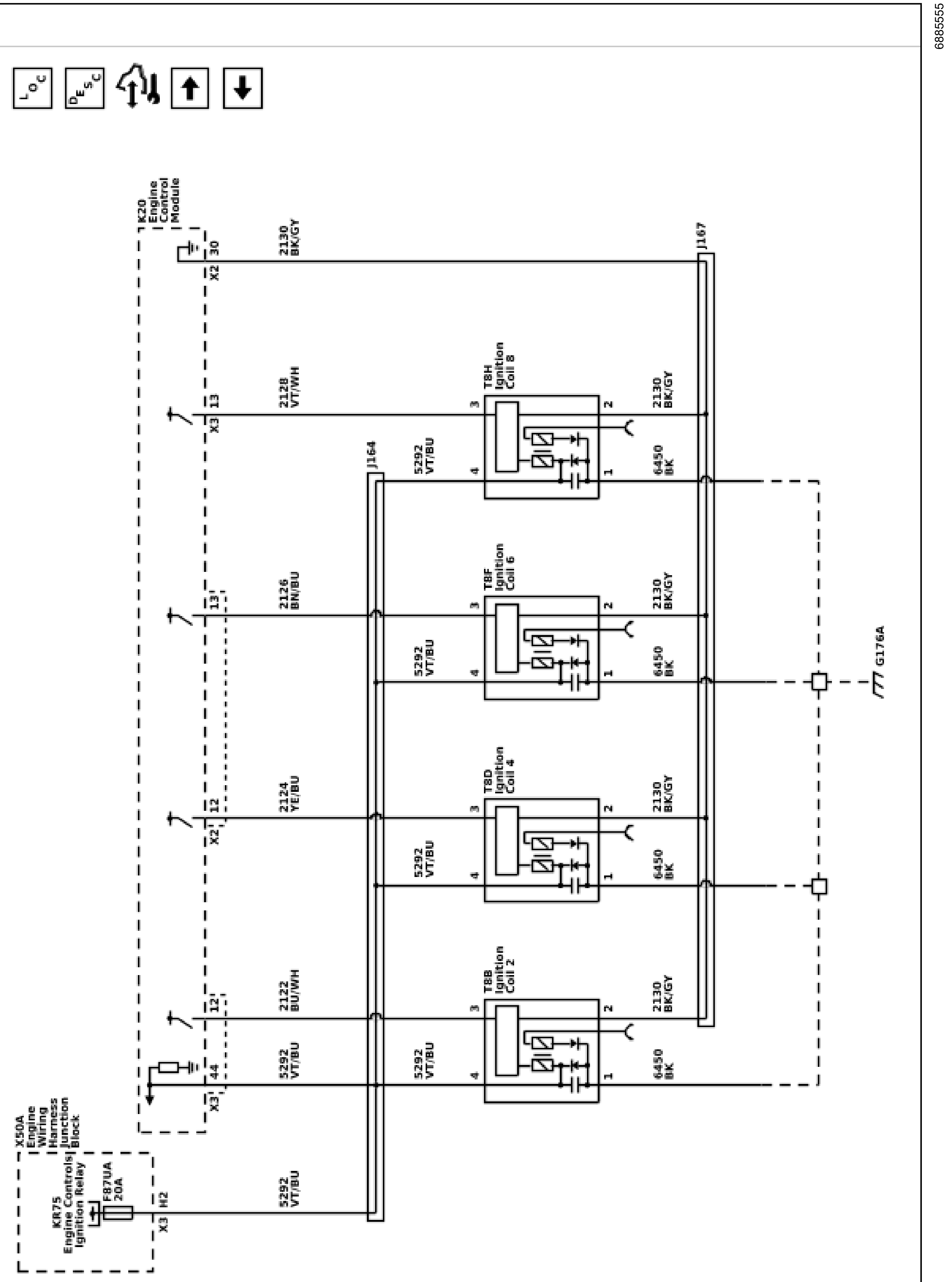
## Engine Controls Schematics (Engine Data Sensors - Oxygen Sensors)


6885553
LOC
DESC
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
F88UA 15A
X3
H4
H3
5293 VT/BU
5294 VT/BU
J166
J168
J152
B52C Heated Oxygen Sensor - Bank 1 Sensor 1
B52E Heated Oxygen Sensor - Bank 2 Sensor 1
B52D Heated Oxygen Sensor - Bank 1 Sensor 2
B52F Heated Oxygen Sensor - Bank 2 Sensor 2
1
2
3
4
5
6
9
6936 YE/GY
6934 BN
6935 GN
6933 BN/WH
3113 GY/WH
2573 BN/GY
2571 WH
2572 BU
2570 YE/WH
3212 GN/YE
3122 GY/WH
3120 VT/BU
3121 WH/YE
3223 WH/BN
3220 VT/GN
3221 YE/BU
X2
25
24
22
23
17
37
69
68
48
49
1
53
67
66
33
47
46
IGN
K20 Engine Control Module

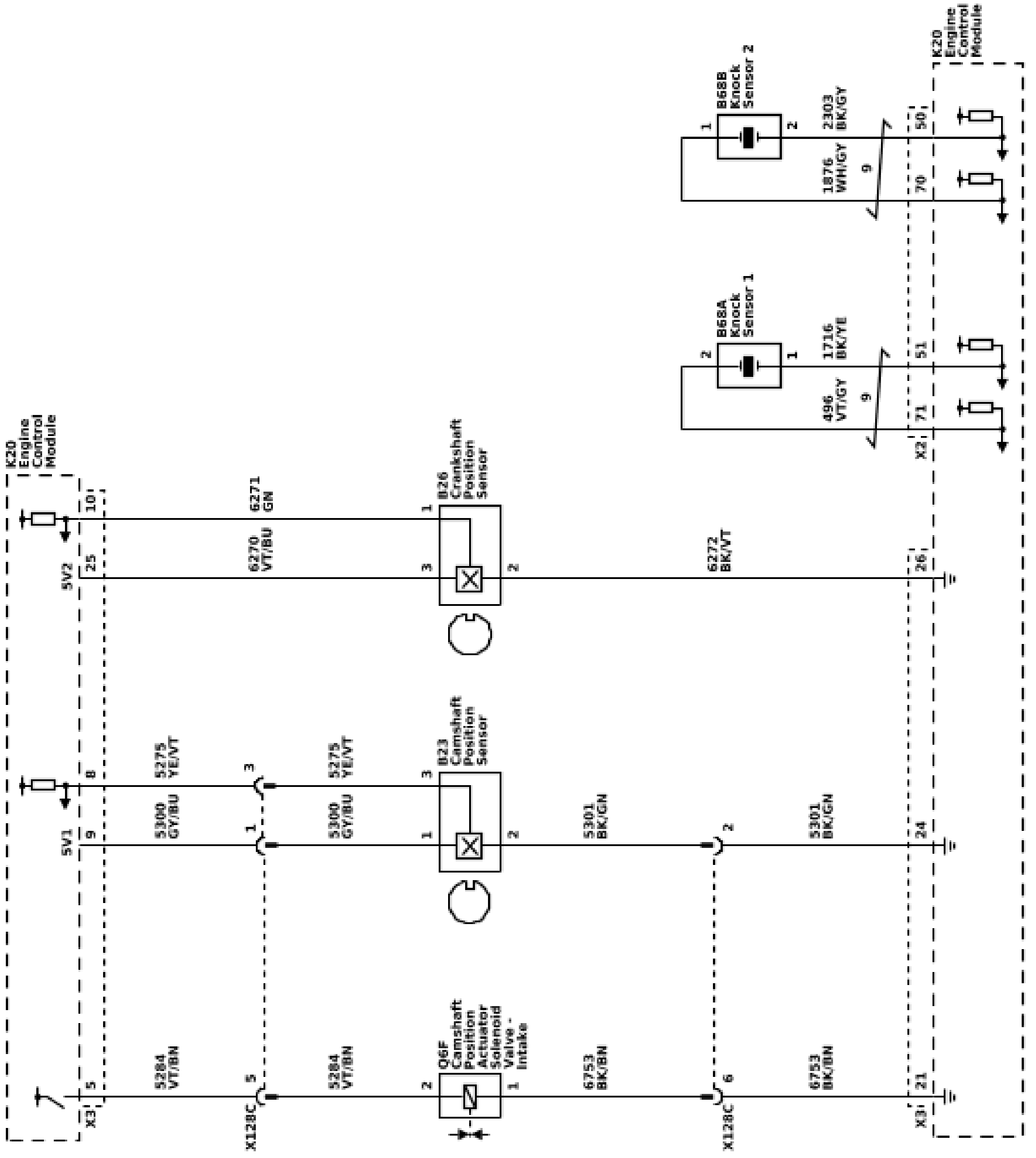
## Engine Controls Schematics (Ignition Controls - Ignition Coils Bank 1)


6885554
K20 Engine Control Module
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F90UA 20A
X3 H5
G6
X1 32
X3 29
X2 28
29
X3 28
30
5291 VT/BU
2121 BU/VT
2123 GN/BU
2125 BU/GY
2127 GN/GY
2129 BK/BU
6150 BK
J161
J155
T8A Ignition Coil 1
T8C Ignition Coil 3
T8E Ignition Coil 5
T8G Ignition Coil 7
1
2
3
4
G175

## Engine Controls Schematics (Ignition Controls - Ignition Coils Bank 2)

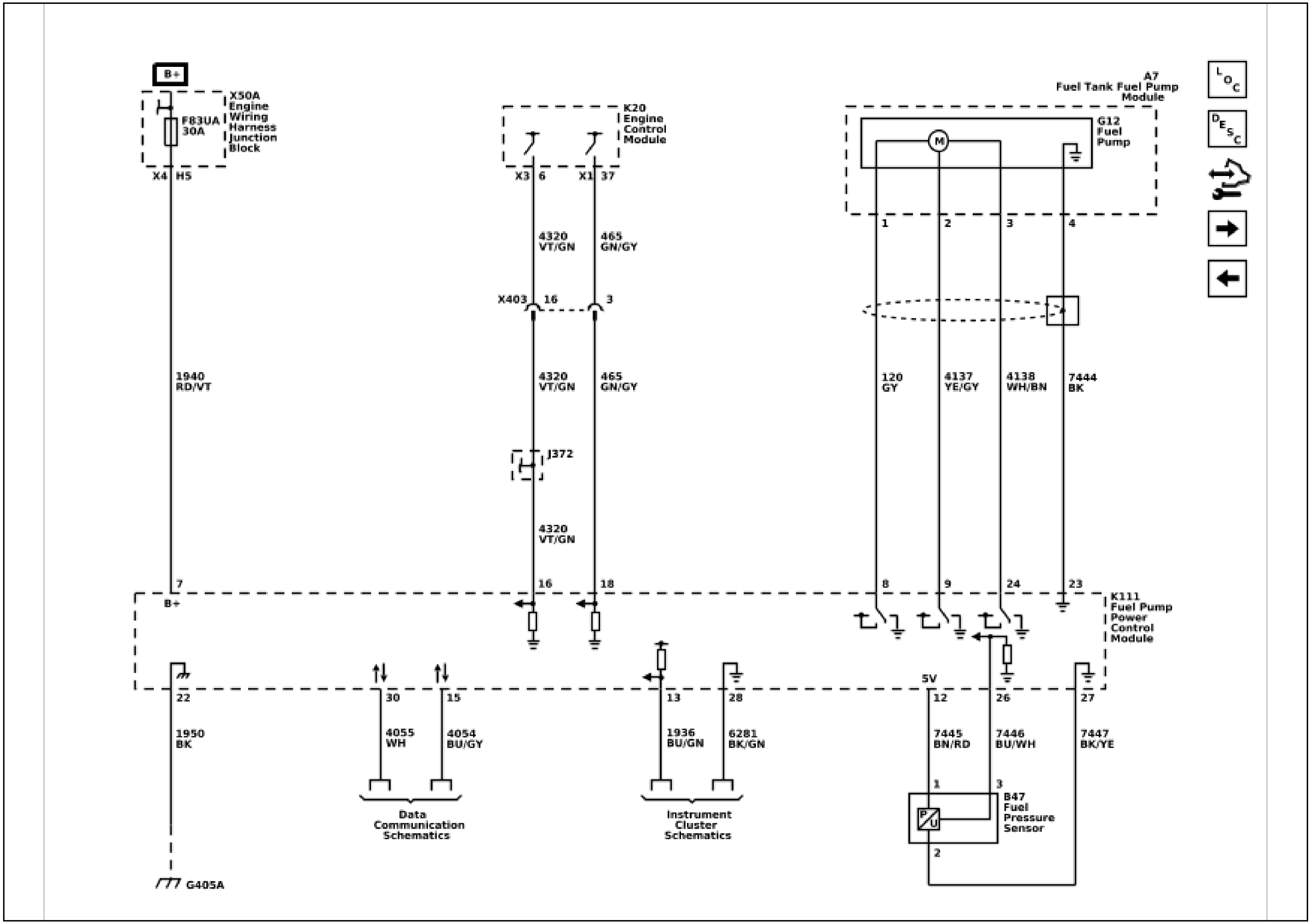

6885555
LOC
DESC
K20 Engine Control Module
X2 30
2130 BK/GY
J167
X3 13
2128 VT/WH
T8H Ignition Coil 8
13
2126 BN/BU
T8F Ignition Coil 6
X2 12
2124 YE/BU
T8D Ignition Coil 4
12
2122 BU/WH
T8B Ignition Coil 2
X3 44
5292 VT/BU
J164
3
4
2
1
6450 BK
G176A
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F87UA 20A
X3 H2

## Engine Controls Schematics (Ignition Controls - Crankshaft Position, Camshaft Position, Knock Sensors and Camshaft Position Actuator)

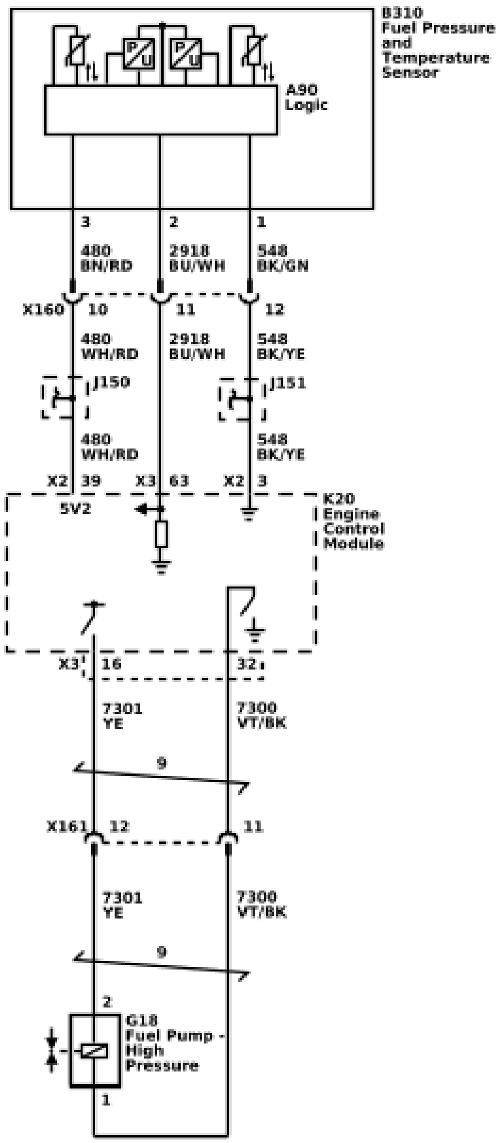

K20 Engine Control Module
5V2
10
25
6271 GN
6270 VT/BU
1
3
2
B26 Crankshaft Position Sensor
6272 BK/VT
26
5V1
8
9
5275 YE/VT
5300 GY/BU
3
1
B23 Camshaft Position Sensor
5301 BK/GN
2
24
X3
5
5284 VT/BN
X128C
5
Q6F Camshaft Position Actuator Solenoid Valve - Intake
2
1
6753 BK/BN
6
X128C
21
X3
B68A Knock Sensor 1
2
1
1716 BK/YE
496 VT/GY
9
51
71
X2
B68B Knock Sensor 2
1
2
2303 BK/GY
1876 WH/GY
9
50
70
K20 Engine Control Module

6885556

## Engine Controls Schematics (Fuel Controls - Low Pressure)

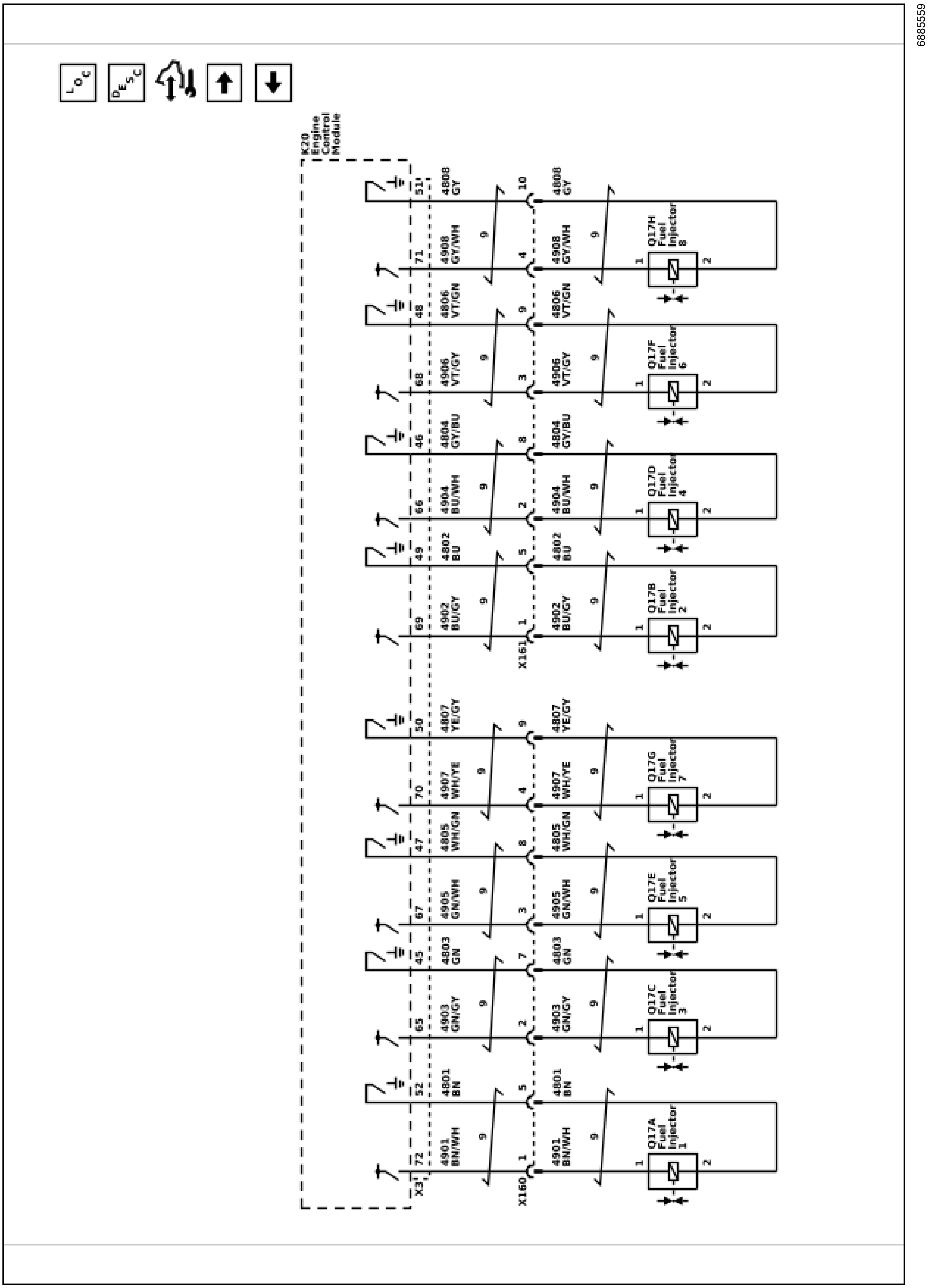

B+
X50A Engine Wiring Harness Junction Block
F83UA 30A
X4 H5
1940 RD/VT
7
B+
K20 Engine Control Module
X3 6
X1 37
4320 VT/GN
465 GN/GY
X403 16
3
J372
16
18
A7 Fuel Tank Fuel Pump Module
G12 Fuel Pump
M
1
2
3
4
120 GY
4137 YE/GY
4138 WH/BN
7444 BK
8
9
24
23
K111 Fuel Pump Power Control Module
22
1950 BK
G405A
30
4055 WH
15
4054 BU/GY
Data Communication Schematics
13
1936 BU/GN
28
6281 BK/GN
Instrument Cluster Schematics
5V
12
7445 BN/RD
26
7446 BU/WH
27
7447 BK/YE
B47 Fuel Pressure Sensor
P
U
6885557

## Engine Controls Schematics (Fuel Controls - High Pressure)

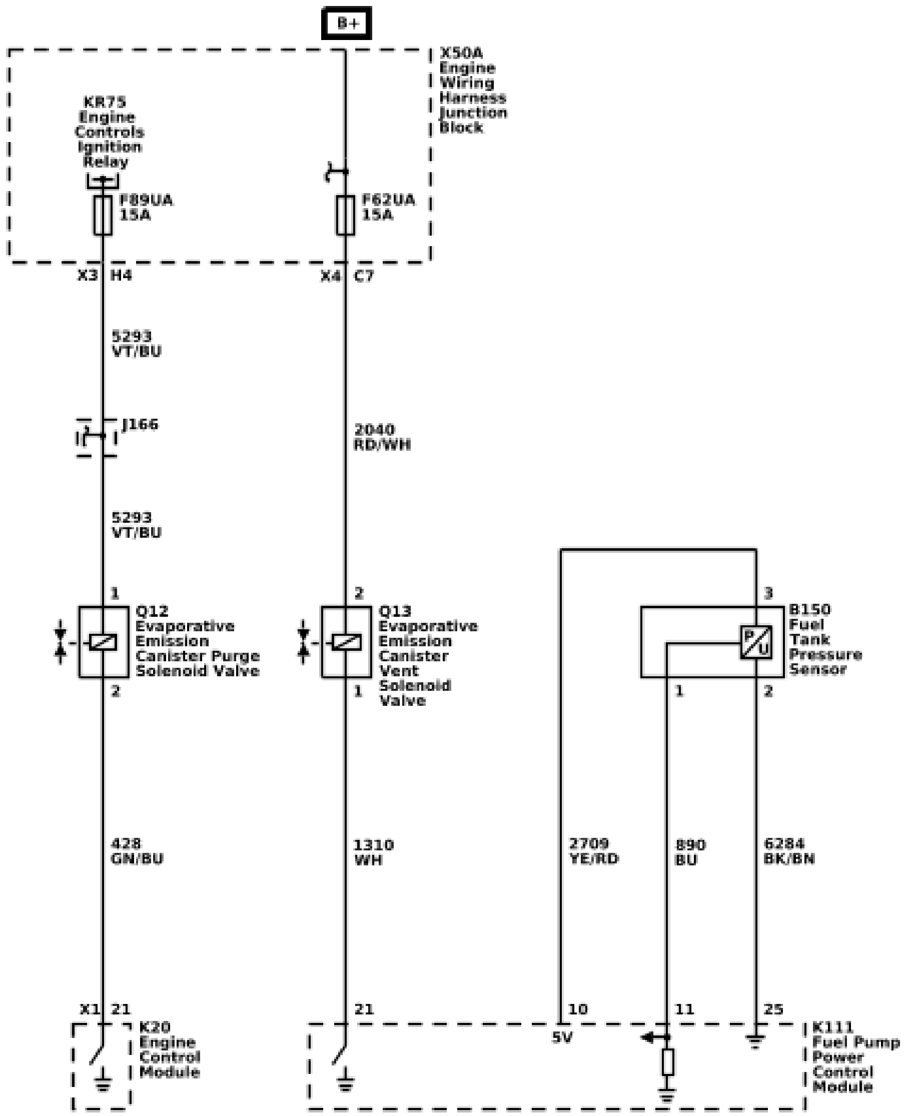

B310
Fuel Pressure
and
Temperature
Sensor
A90
Logic
3
2
1
480
BN/RD
2918
BU/WH
548
BK/GN
X160
10
11
12
480
WH/RD
2918
BU/WH
548
BK/YE
J150
J151
480
WH/RD
548
BK/YE
X2
39
X3
63
X2
3
5V2
K20
Engine
Control
Module
X3
16
32
7301
YE
7300
VT/BK
9
X161
12
11
7301
YE
7300
VT/BK
9
2
G18
Fuel Pump -
High
Pressure
1

6885558

## Engine Controls Schematics (Fuel Controls - Fuel Injectors)

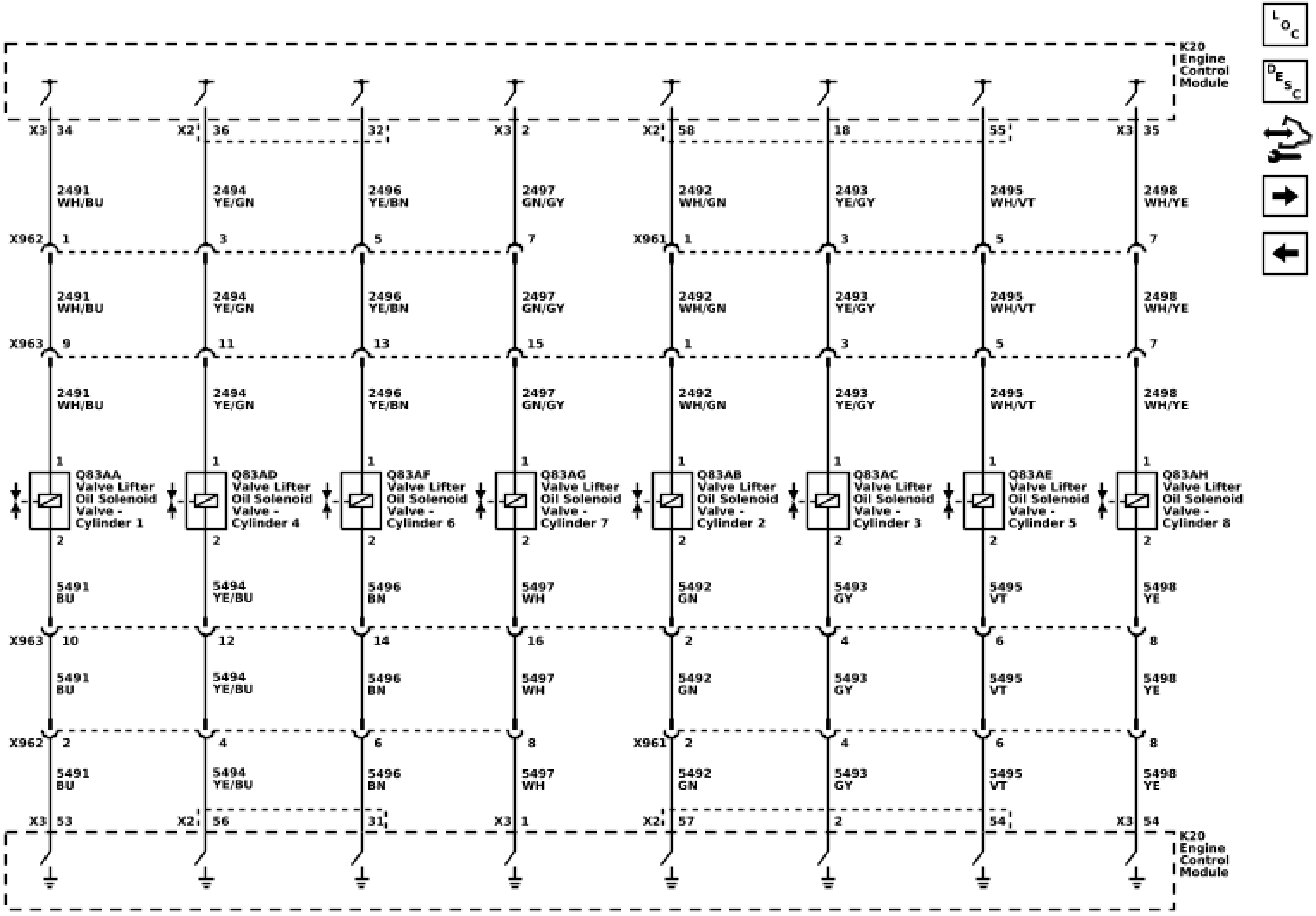

6885559
K20 Engine Control Module
X3
72
4901 BN/WH
52
4801 BN
65
4903 GN/GY
45
4803 GN
67
4905 GN/WH
47
4805 WH/GN
70
4907 WH/YE
50
4807 YE/GY
69
4902 BU/GY
49
4802 BU
66
4904 BU/WH
46
4804 GY/BU
68
4906 VT/GY
48
4806 VT/GN
71
4908 GY/WH
51
4808 GY
X160
X161
1
5
2
7
3
8
4
9
10
Q17A Fuel Injector 1
Q17B Fuel Injector 2
Q17C Fuel Injector 3
Q17D Fuel Injector 4
Q17E Fuel Injector 5
Q17F Fuel Injector 6
Q17G Fuel Injector 7
Q17H Fuel Injector 8

## Engine Controls Schematics (Fuel Controls - Evaporative Emissions Controls)


B+
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
F89UA 15A
F62UA 15A
X3 H4
X4 C7
5293 VT/BU
J166
5293 VT/BU
2040 RD/WH
1
Q12 Evaporative Emission Canister Purge Solenoid Valve
2
2
Q13 Evaporative Emission Canister Vent Solenoid Valve
1
3
B150 Fuel Tank Pressure Sensor
P U
1
2
428 GN/BU
1310 WH
2709 YE/RD
890 BU
6284 BK/BN
X1 21
K20 Engine Control Module
21
10
5V
11
25
K111 Fuel Pump Power Control Module

6885560

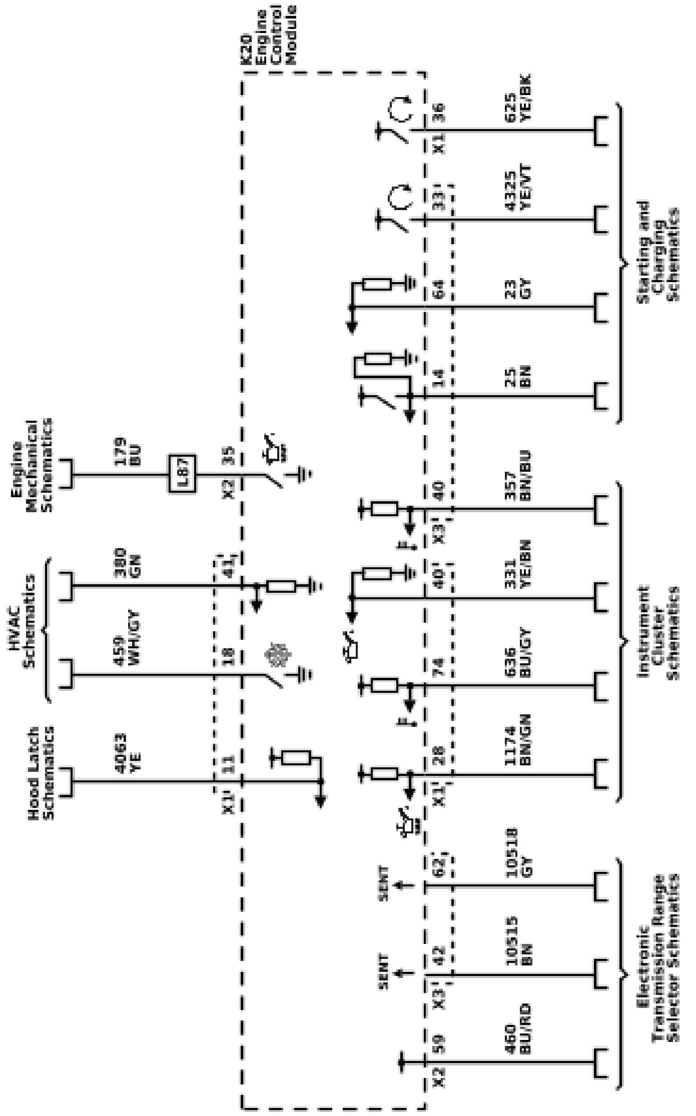
## Engine Controls Schematics (Device Controls - Displacement on Demand)


K20 Engine Control Module
X3 34
2491 WH/BU
X962 1
X963 9
Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1
5491 BU
X963 10
X962 2
X3 53
X2 36
2494 YE/GN
3
11
Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4
5494 YE/BU
12
4
X2 56
32
2496 YE/BN
5
13
Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6
5496 BN
14
6
31
X3 2
2497 GN/GY
7
15
Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7
5497 WH
16
8
X3 1
X2 58
2492 WH/GN
X961 1
1
Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2
5492 GN
2
X961 2
X2 57
18
2493 YE/GY
3
3
Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3
5493 GY
4
4
2
55
2495 WH/VT
5
5
Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5
5495 VT
6
6
54
X3 35
2498 WH/YE
7
7
Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8
5498 YE
8
8
X3 54
K20 Engine Control Module
1
2
L O C
D E S C

6885561

## Engine Controls Schematics (Controlled/Monitored Subsystem References)

6885562


K20 Engine Control Module
Engine Mechanical Schematics
179 BU
L87
X2 35
HVAC Schematics
380 GN
41
459 WH/GY
18
Hood Latch Schematics
4063 YE
X1 11
X1 36
625 YE/BK
33
4325 YE/VT
64
23 GY
14
25 BN
Starting and Charging Schematics
40
357 BN/BU
X3
40
331 YE/BN
74
636 BU/GY
28
1174 BN/GN
X1
Instrument Cluster Schematics
SENT
62
10518 GY
SENT
42
10515 BN
X3
X2 59
460 BU/RD
Electronic Transmission Range Selector Schematics

# Description and Operation

## Catalytic Converter Description and Operation

## Three-Way Catalytic Converter

A three-way catalyst is designed to reduce the levels of hydrocarbons, carbon monoxide and nitrogen oxide.

## Catalytic Converter

### Catalyst Conversion

The catalyst within the converter promotes a chemical reaction, which oxidizes the hydrocarbons and the carbon monoxide that are present in the exhaust gas. This process converts the hydrocarbons and the carbon monoxide into water vapor and carbon dioxide, and reduces the nitrogen oxide, converting the nitrogen oxide into nitrogen.

### Oxygen Storage

The catalyst stores oxygen. The engine control module (ECM) monitors this process by using heated oxygen sensors that are in the exhaust stream before and after the catalyst. The heated oxygen sensors produces an output signal that the ECM uses to calculate the oxygen storage capacity of the catalyst. This indicates the ability of the catalyst to convert the exhaust emissions efficiently. The ECM monitors the efficiency of the catalyst by monitoring the heated oxygen sensors during an off-idle, deceleration fuel cut-off event. When the catalyst is functioning properly, the post catalyst heated oxygen sensors response to the fuel conditions during the deceleration fuel cut-off event is slow compared to the response of the pre catalyst heated oxygen sensors. When the post heated oxygen sensors response is near that of the pre heated oxygen sensors, the oxygen storage capability and efficiency of the catalyst may be degraded below an acceptable threshold.

### Cold Start Strategy

The catalyst must be warmed to efficiently reduce the emissions. The cold start strategy is to reduce the amount of time it takes to warm the catalyst. During a cold start, the engine spark timing and fuel injection are altered to allow the catalyst to warm quickly. The ECM monitors the following to build an exhaust energy model:

- Engine airflow
- Engine coolant temperature
- Engine idle speed
- Engine run time
- Fuel Injection
- Spark advance

The actual model is then compared to the expected exhaust energy model.

### Fuel Trim Bias

Fuel trim bias is used to keep the post catalyst air/fuel ratio within a predetermined range. This allows optimal catalyst efficiency under various operating conditions. The ECM constantly monitors how lean or rich the fuel trim bias is commanded, to determine if the fuel trim bias is greater than a calibrated amount.

## Heated Oxygen Sensor Description and Operation

The engine control module (ECM) controls a closed loop air/fuel metering system in order to provide the best possible combination of driveability, fuel economy, and emission control. The ECM monitors the heated oxygen sensor (HO2S) signal and adjusts the fuel delivery based on the signal while in closed loop operation. The short term fuel trim values change rapidly in response to the HO2S signal. These changes fine tune the engine fueling. The long term fuel trim values change in response to trends in the short term fuel trim. The long term fuel trim makes coarse adjustments to fueling in order to re-center and restore control to short term fuel trim.

## Heated Oxygen Sensor

When the engine is started, the ECM operates in an Open Loop mode, ignoring the HO2S signal voltage while calculating the air-to-fuel ratio. While the engine runs, the HO2S heats up and begins to generate a voltage within a range of 0–1,000 mV. Once sufficient HO2S voltage fluctuation is observed by the ECM, Closed Loop mode is entered. The ECM uses the HO2S voltage to determine the air-to-fuel ratio. An HO2S voltage that increases toward 1,000 mV indicates a rich fuel mixture. An HO2S voltage that decreases toward 0 mV indicates a lean fuel mixture.

Heated oxygen sensors are used for fuel control and post catalyst monitoring. Each HO2S compares the oxygen content of the surrounding air with the oxygen content in the exhaust stream. The HO2S must reach operating temperature to provide an accurate voltage signal. A heating element inside the HO2S minimizes the time required for the sensor to reach operating temperature. This allows the system to enter Closed Loop earlier and the ECM to calculate the air-to-fuel ratio sooner. Voltage is provided to the heater by an ignition voltage circuit through a fuse. With the engine running, ground is provided to the heater by the HO2S heater low control circuit through a low side driver within the ECM. The ECM uses pulse width modulation (PWM) to control the HO2S heater operation to maintain a specific HO2S operating temperature range.

## Wide Band Heated Oxygen Sensor

The wide band heated oxygen sensor (HO2S) measures the amount of oxygen in the exhaust system and provides more information than the switching style HO2S. The wide band sensor consists of an oxygen sensing cell, an oxygen pumping cell, and a heater. The exhaust gas sample passes through a diffusion gap between the sensing cell and the pumping cell. An electronic circuit within the ECM controls the pump current through the oxygen pumping cell in order to maintain a constant voltage in the oxygen sensing cell. The ECM monitors the voltage variation in the sensing cell and attempts to keep the voltage constant by increasing or decreasing the amount of current flow, or oxygen ion flow, from the pumping cell. By measuring the amount of current required to maintain the voltage in the sensing cell, the ECM can determine the concentration of oxygen in the exhaust. The HO2S pumping current is displayed as a lambda value. A lambda value of 1 is equal to a stoichiometric air fuel ratio of 14.7:1. Under normal operating conditions, the lambda value will remain around 1. When the fuel system is lean, the oxygen level will be high and the lambda signal will be high or more than 1. When the fuel system is rich, the oxygen level will be low, and the lambda signal will be low or less than 1. The ECM uses this information to maintain the correct air/fuel ratio. If the ECM detects that the HO2S signal is out of range a DTC will set.

The heating element inside each HO2S heats the sensor to bring it up to operating conditions faster. This allows the system to enter Closed Loop mode earlier and the ECM to calculate the air-to-fuel ratio sooner.

## Inspection/Maintenance Description and Operation

Some state/provincial and local governments require that a vehicle pass on-board diagnostic (OBD) system tests and the Inspection/Maintenance (I/M) emission inspection in order to renew license plates. This is accomplished by viewing the I/M System monitors on a scan tool and confirming that no Permanent DTCs are set.

The OBD II system monitors all emission control systems that are on-board. The OBD II regulations require monitoring of the following:

| Monitor | Diesel | Gasoline |
|---|---|---|
| Boost System Monitor - Since Diagnostic Trouble Codes Cleared | X | — |
| Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Evaporative Emission Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Exhaust Aftertreatment Monitor - Since Diagnostic Trouble Codes Cleared | X | — |
| Exhaust Gas Recirculation Valve/Camshaft Position Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Exhaust Gas Sensor Monitor - Since Diagnostic Trouble Codes Cleared | X | — |
| Fuel System Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Heated Catalytic Converter Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Misfire Monitor - Since Diagnostic Trouble Codes Cleared | X | X |
| Oxygen Sensor Heater Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Oxygen Sensor/Heated Oxygen Sensor Monitor - Since Diagnostic Trouble Codes Cleared | — | X |
| Particulate Filter Monitor - Since Diagnostic Trouble Codes Cleared | X | X |

## I/M System Status

Each system monitor requires at least one, and sometimes several diagnostic tests. The result of each test is reported by a DTC. A system monitor is Complete when either all of the DTCs comprising the monitor have run and passed, or when any one of the DTCs comprising the monitor has illuminated the malfunction indicator lamp (MIL). For example, when the Oxygen Sensor Heater Monitor indicates Complete, all of the oxygen sensor heaters have been diagnosed. If the vehicle has 4 heated oxygen sensors, all 4 heaters have been diagnosed.

Once the system monitor is complete, the I/M System Status parameter will display Complete in the value column of the scan tool. Any monitor that is not applicable to a vehicle will display Not Supported in the scan tool value column. The I/M System Status parameter will display Incomplete in the value column when any of the required tests for that system have not run. The following is a list of conditions that would set the I/M System Status monitor to Incomplete:

- The vehicle is new from the factory and has not yet been driven through the necessary drive conditions to complete the tests.
- The battery has been disconnected or discharged below operating voltage.

- The control module power or ground has been interrupted.
- The control module has been programmed.
- The control module DTCs have been cleared.

### Permanent DTCs

Permanent DTCs are defined as confirmed fault codes that are currently commanding the MIL on and stored in non-volatile memory. Permanent DTCs cannot be erased by any scan tool command or by disconnecting power to the controller.

The intended use of this data is to prevent vehicles from passing an I/M inspection by disconnecting the battery or clearing codes with a scan tool prior to the inspection. The presence of Permanent DTCs at an inspection without the MIL illuminated is an indication that a proper repair was not verified by the OBD II system.

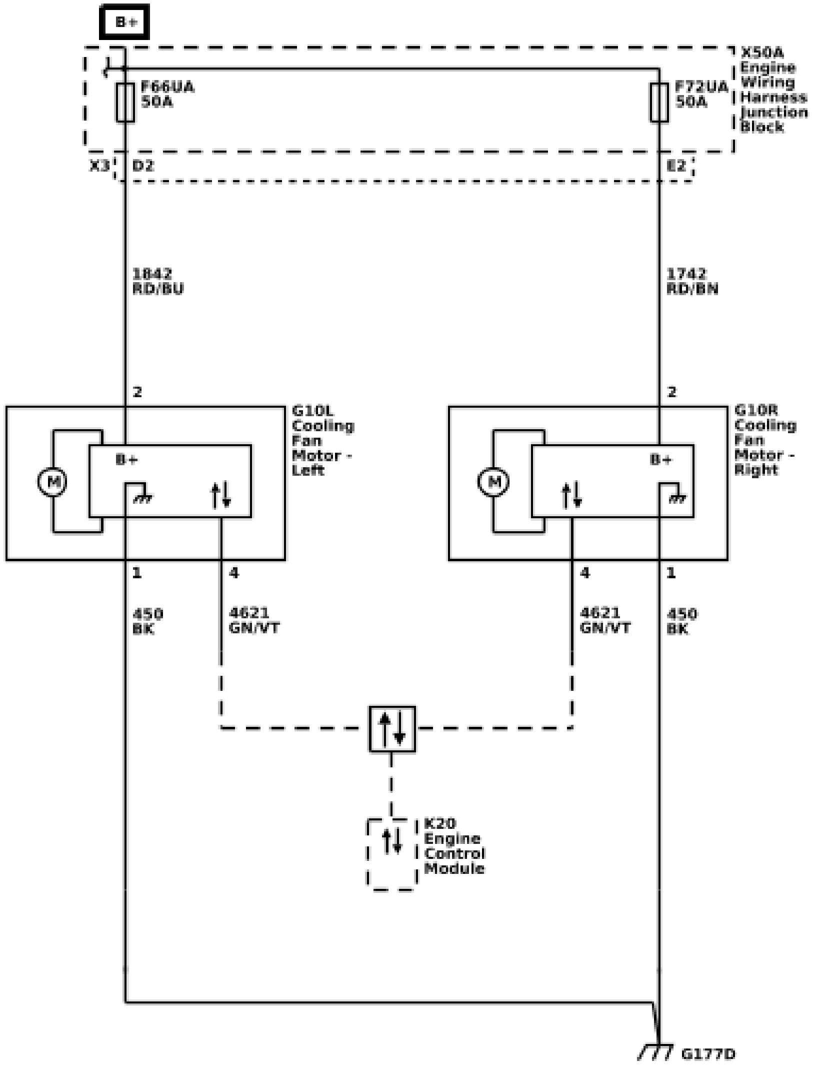
Only the OBD II system can clear Permanent DTCs. The OBD II system must determine that the malfunction that caused the Permanent DTC to be stored no longer exists and is not commanding the MIL.

- If the MIL goes out naturally due to 3 passing drive cycles (scan tool code clear is not used), then the Permanent DTC is cleared at power down of the last drive cycle.
- If a scan tool code clear is used to turn off the MIL then the Permanent DTC is not cleared, the DTC must PASS and not FAIL. The Permanent DTC is cleared at power down of the drive cycle.
- If the controller is programmed, all Permanent DTCs are cleared.

# Engine Heating and Cooling

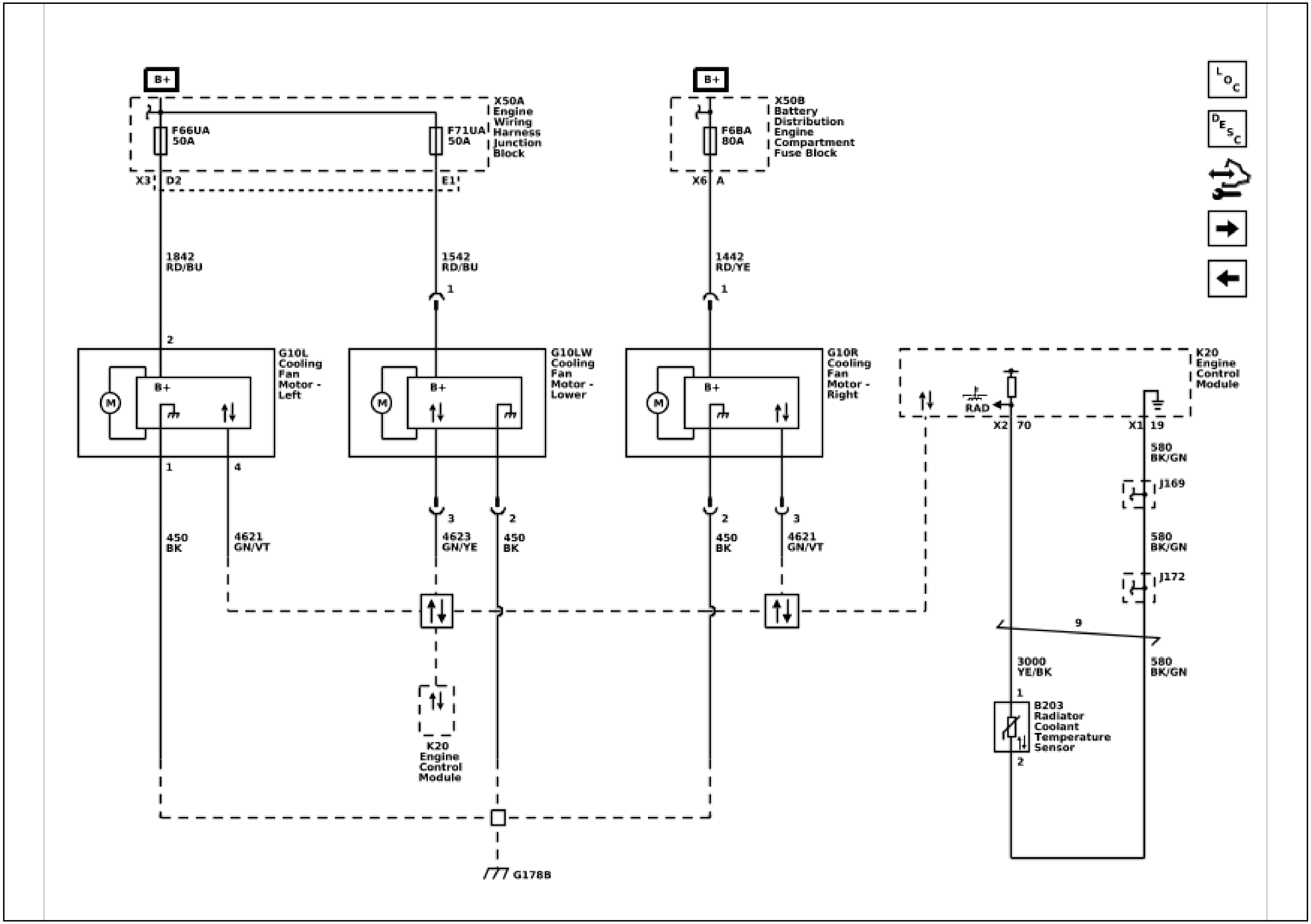
## Schematic and Routing Diagrams

## Engine Heating/Cooling Schematics (Engine Cooling Fans (L84 / L87))


B+
X50A Engine Wiring Harness Junction Block
F66UA 50A
F72UA 50A
X3
D2
E2
1842 RD/BU
1742 RD/BN
2
2
G10L Cooling Fan Motor - Left
G10R Cooling Fan Motor - Right
B+
B+
M
M
1
4
4
1
450 BK
4621 GN/VT
4621 GN/VT
450 BK
K20 Engine Control Module
G177D

6885563

## Engine Heating/Cooling Schematics (Engine Cooling Fans and Radiator Temperature Sensor (LZ0))


B+
F66UA
50A
F71UA
50A
X50A
Engine
Wiring
Harness
Junction
Block
X3
D2
E1
B+
F6BA
80A
X50B
Battery
Distribution
Engine
Compartment
Fuse Block
X6
A
1842
RD/BU
1542
RD/BU
1442
RD/YE
1
1
2
G10L
Cooling
Fan
Motor -
Left
M
B+
G10LW
Cooling
Fan
Motor -
Lower
G10R
Cooling
Fan
Motor -
Right
K20
Engine
Control
Module
RAD
X2
70
X1
19
1
4
3
2
2
3
450
BK
4621
GN/VT
4623
GN/YE
450
BK
450
BK
4621
GN/VT
580
BK/GN
J169
580
BK/GN
J172
9
3000
YE/BK
580
BK/GN
1
B203
Radiator
Coolant
Temperature
Sensor
2
K20
Engine
Control
Module
G178B
L O C
D E S C

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## Engine Heating/Cooling Schematics (Heater Coolant Pump)

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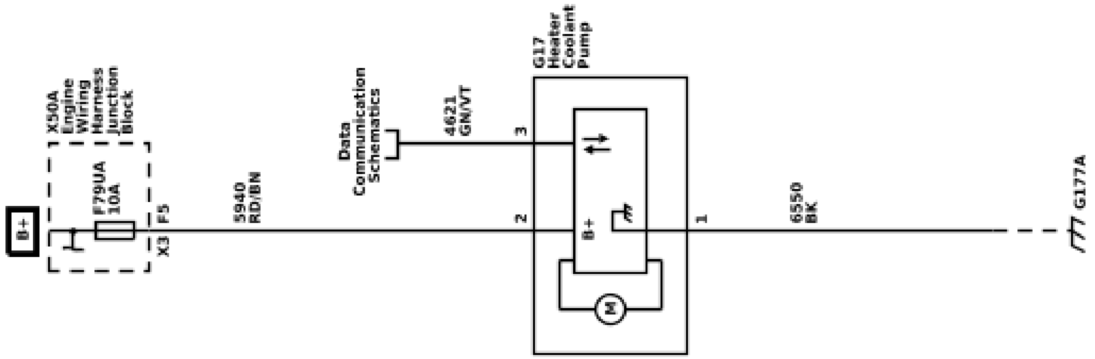
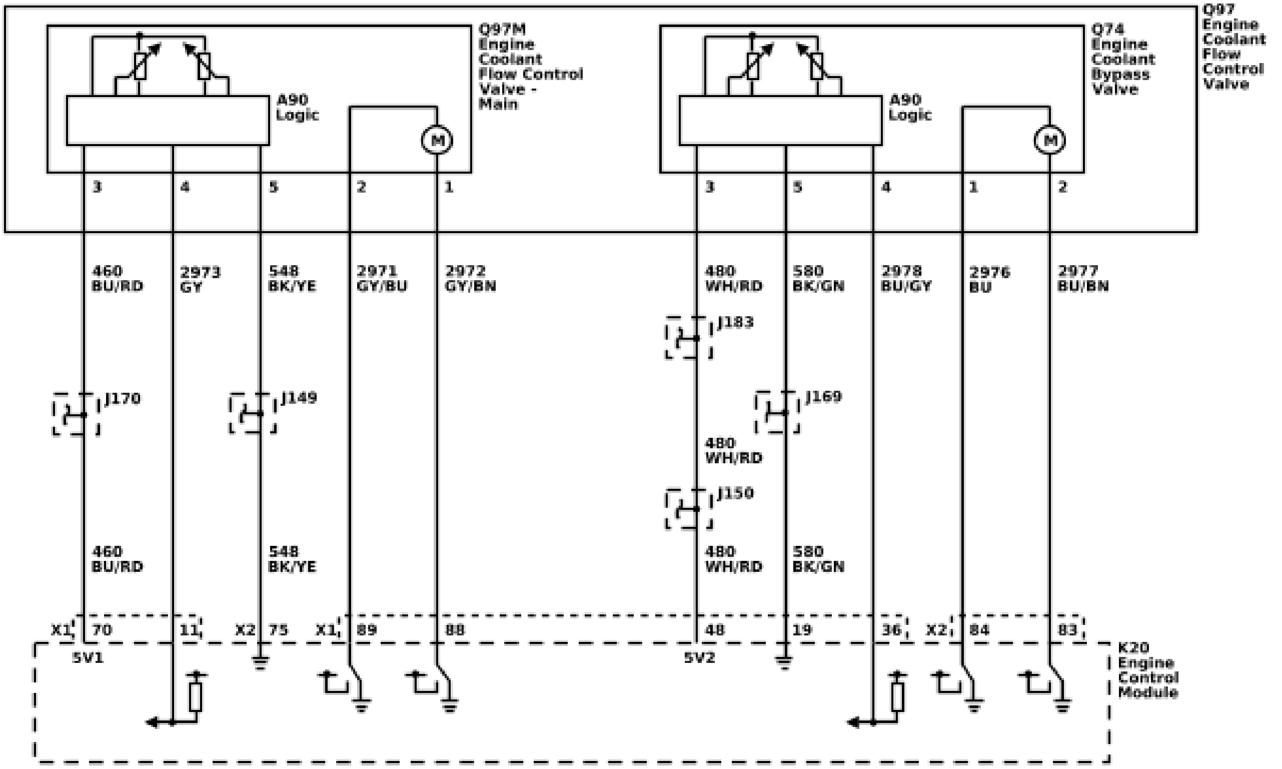
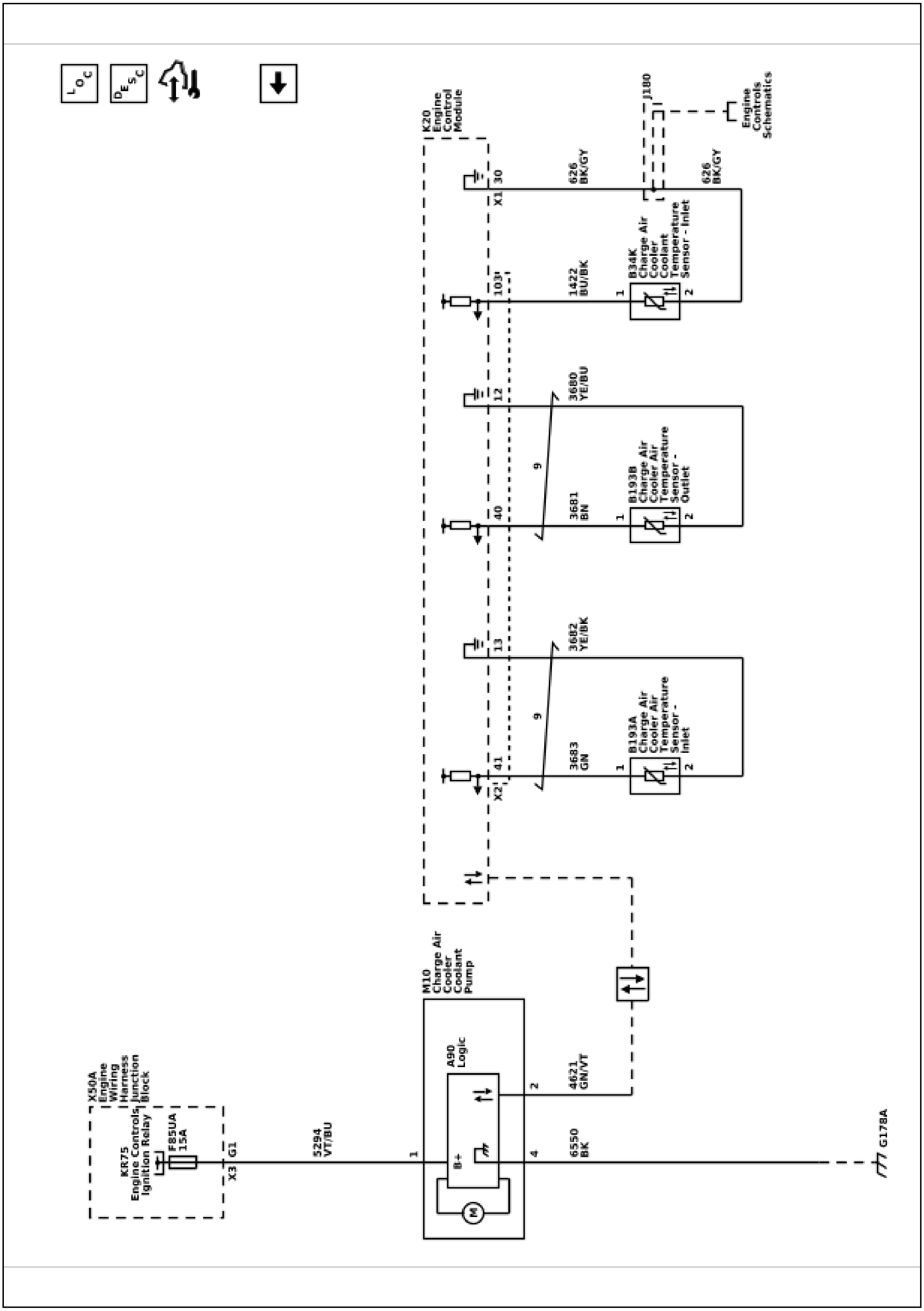

B+
X50A Engine Wiring Harness Junction Block
F79UA 10A
X3 F5
5940 RD/BN
Data Communication Schematics
4621 GN/VT
G17 Heater Coolant Pump
3
2
1
B+
M
6550 BK
G177A

## Engine Heating/Cooling Schematics (Coolant Flow Control Valve (LZ0))


Q97 Engine Coolant Flow Control Valve
Q97M Engine Coolant Flow Control Valve - Main
A90 Logic
Q74 Engine Coolant Bypass Valve
A90 Logic
M
M
3
4
5
2
1
3
5
4
1
2
460 BU/RD
2973 GY
548 BK/YE
2971 GY/BU
2972 GY/BN
480 WH/RD
580 BK/GN
2978 BU/GY
2976 BU
2977 BU/BN
J183
J170
J149
J169
480 WH/RD
J150
460 BU/RD
548 BK/YE
480 WH/RD
580 BK/GN
X1 70
11
X2 75
X1 89
88
48
19
36
X2 84
83
5V1
5V2
K20 Engine Control Module

6885566

Engine Heating/Cooling Schematics (Charge Air Cooler (LZ0))


6885567
K20
Engine
Control
Module
J180
Engine
Controls
Schematics
X1 30
626
BK/GY
626
BK/GY
103
1422
BU/BK
1
2
B34K
Charge Air
Cooler
Coolant
Temperature
Sensor - Inlet
12
3680
YE/BU
9
40
3681
BN
1
2
B193B
Charge Air
Cooler Air
Temperature
Sensor -
Outlet
13
3682
YE/BK
9
X2 41
3683
GN
1
2
B193A
Charge Air
Cooler Air
Temperature
Sensor -
Inlet
M10
Charge Air
Cooler
Coolant
Pump
A90
Logic
2
4621
GN/VT
X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine Controls
Ignition Relay
F85UA
15A
X3 G1
5294
VT/BU
1
B+
4
6550
BK
G178A
M

# Description and Operation

## Cooling System Description and Operation

### Engine Coolant Indicators

**Engine Hot - AC Off**
The instrument panel cluster (IPC) displays **Engine Hot - AC Off** message when the IPC receives a message from the powertrain control module (PCM) requesting illumination of this driver warning when the temperature reaches 125°C (257°F).

**Engine Hot - Idle Engine**
The IPC **Engine Hot - Idle Engine** when the IPC receives a message from the PCM requesting illumination of this driver warning when the temperature reaches 128°C (262°F).

**Engine Hot - Turn Engine Off**
The IPC displays **Engine Hot - Turn Engine Off** message when the IPC detects a reduced engine power condition from the PCM. The IPC receives a message from the PCM requesting illumination when the engine temperature reaches 135°C (275°F).

### Coolant Heater (If Equipped)

The optional coolant heater (RPO K05) operates using 110 V AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather. The coolant heater also helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. There is an internal thermal switch in the coolant heater cord that prevents operation above −18°C (0°F). A weather shield on the cord is provided to protect the plug when not in use.

### Cooling System

The cooling system's function is to maintain an efficient engine operating temperature during all engine speeds and operating conditions. The cooling system is designed to remove various amounts of the heat produced by the burning of the air-fuel mixture. When the engine is cold, the coolant does not flow to the radiator until the thermostat opens. This allows the engine to warm quickly.

**Cooling Cycle**
Coolant is drawn from the radiator outlet and into the water pump inlet by the water pump. Coolant will then be pumped through the water pump outlet and into the engine block. In the engine block, the coolant circulates through the water jackets surrounding the cylinders, where it absorbs heat.

Some coolant is also pumped from the water pump to the heater core, then back to the water pump. This provides the passenger compartment with heat and defrost.

The coolant is then forced through the cylinder head gasket openings and into the cylinder heads. In the cylinder heads, the coolant flows through the water jackets surrounding the combustion chambers and valve seats, where it absorbs additional heat.

**Coolant**
The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL® and suitable drinking water. The coolant solution carries excess heat away from the engine to the radiator, where the heat is dissipated to the atmosphere.

**Radiator**
The radiator is a heat exchanger. It consists of a core and two tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere.

The inlet and outlet tanks are a molded, high temperature, nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core.

The radiator also has a radiator drain cock, located in the bottom of the right hand tank. The radiator drain cock unit includes the drain cock and drain cock seal.

The radiator removes heat from the coolant passing through it. The fins on the core transfer heat from the coolant passing through the tubes. As air passes between the fins, it absorbs heat and cools the coolant.

**Auxiliary Coolant Pump**
An auxiliary coolant pump is used to circulate coolant through the cabin heater cores during Stop/Start operation to improve cabin heating performance.

**Radiator Surge Tank and Radiator Surge Tank Cap**
The radiator surge tank is a plastic tank with a threaded pressure radiator surge tank cap that contains a blow off or pressure relief valve, vacuum or atmospheric valve and seals the cooling system. The radiator surge tank is mounted at a point higher than all other coolant passages. The radiator surge tank provides an air space in the cooling system that allows the coolant to expand and contract. The radiator surge tank provides a coolant fill point and a central air bleed location. The radiator surge tank cap pressure valve is held against its seat by a spring, which protects the radiator from excessive cooling system pressure. The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off.

During vehicle use, the coolant heats and expands. The pressure cap allows cooling system pressure to build up as the temperature increases. As the pressure builds, the boiling point of the coolant increases. Engine coolant can be safely run at a temperature much higher than the boiling point of the coolant at atmospheric pressure. The hotter the coolant is, the faster the heat transfers from the radiator to the cooler, passing air. Increased coolant volume flows into the radiator surge tank. If the pressure in the cooling system exceeds the rating of the pressure cap, it raises the pressure valve, venting the excess pressure through a channel into the overflow bottle. As the coolant circulates, the air is allowed to bubble out. This air is then transferred to the overflow bottle, through the radiator surge tank cap, where it returns to the atmosphere. Coolant without air bubbles absorbs heat much better than coolant with bubbles. When the engine cools, the coolant, without air bubbles, contracts back into the radiator surge tank from the bottom of the overflow bottle and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the radiator surge tank. This equalizes the pressure in the cooling system with atmospheric pressure, preventing the radiator and coolant hoses from collapsing.

**Air Baffles and Seals**
The cooling system uses deflectors, air baffles and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and air conditioning condenser, and prevent recirculation of hot air for better hot weather cooling and air conditioning condenser performance.

**Engine Oil Cooler**
Excessive heat in the engine oil is removed via a heat exchanger located in the right side tank of the radiator.

The engine oil temperature is controlled by the temperature of the engine coolant that surrounds the oil cooler in the radiator.

The engine oil pump, pumps the oil through the engine oil cooler line to the oil cooler. The oil then flows through the cooler where excessive heat is transferred to the engine coolant. The oil is then pumped through the oil cooler return line, to the engine block system.

**Transmission Oil Cooler**
Excessive heat in the transmission oil is removed via a heat exchanger located in front of the air conditioning condenser.

The transmission oil temperature is controlled by the ambient air flowing by the cooler.

The transmission oil pump, pumps the oil through the transmission oil cooler line to the oil cooler. The oil then flows through the cooler where excessive heat is transferred to the ambient air. The oil is then pumped through the oil cooler return line, to transmission.

Flow to the cooler only occurs when the oil temperature is above the setting of the Thermal By-Pass valve.

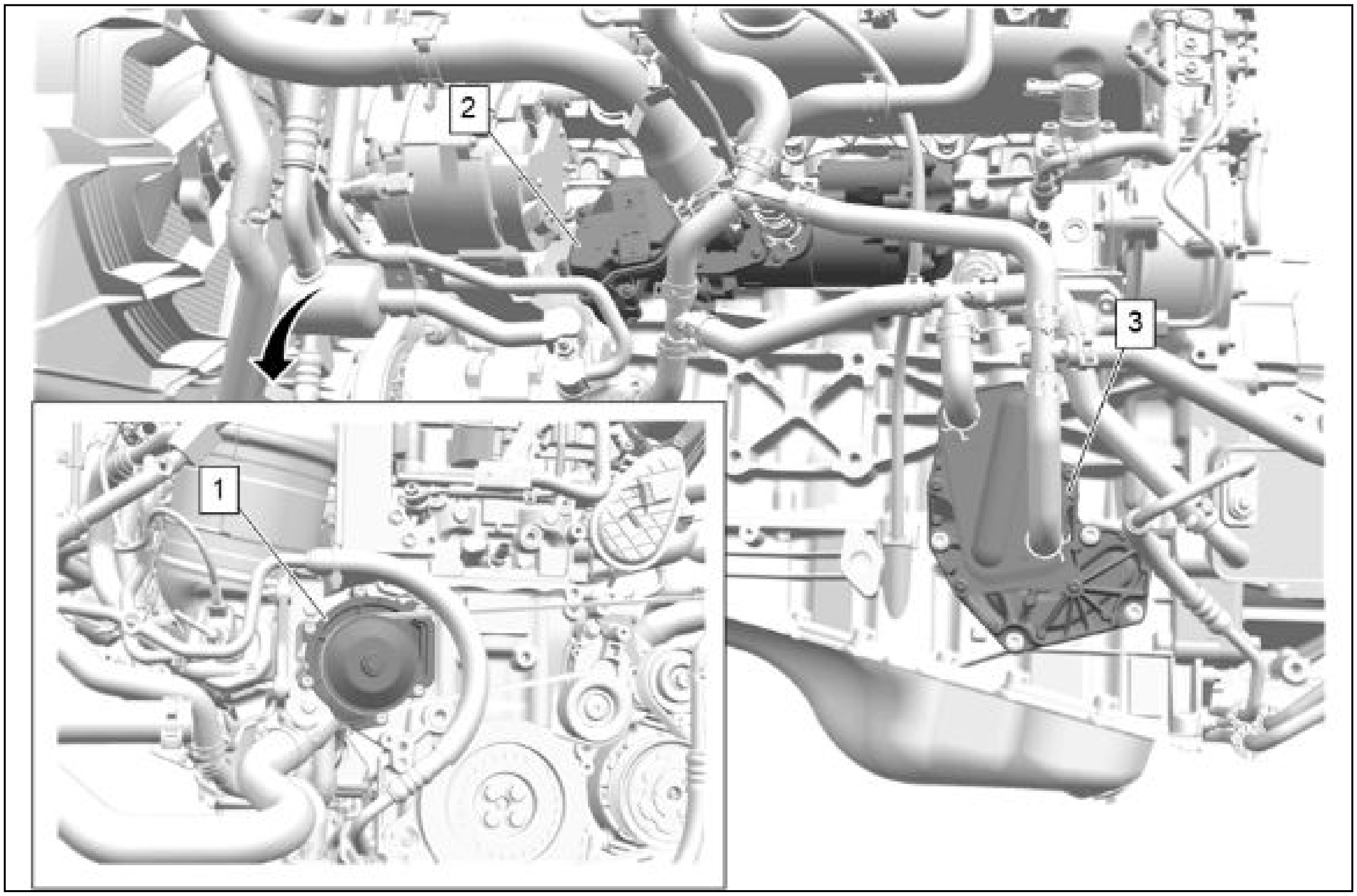
## Cooling System Description and Operation (High Temperature Coolant Loop)

### Active Thermal Management

This vehicle uses an advance technology cooling system design, which makes use of active thermal management strategy. The difference between conventional cooling systems that use mechanical water pumps and active thermal management is that the predominant goal of the active thermal management strategy is to prioritize fuel economy by maintaining an ideal engine operating temperature during all engine speeds and operating conditions, while still meeting customer expectations for vehicle performance and reducing vehicle emissions. This vehicle utilizes a secondary coolant loop which circulates coolant to the water charge air cooler, fuel cooler, and the diesel exhaust fluid injectors via an auxiliary low temperature radiator and chassis mounted electric coolant pump. Refer to low temperature coolant loop description and operation: *Cooling System Description and Operation 7-57* *Cooling System Description and Operation (High Temperature Coolant Loop) 7-58* *Cooling System Description and Operation (Low Temperature Coolant Loop) 7-80*

**The key features of active thermal management include:**

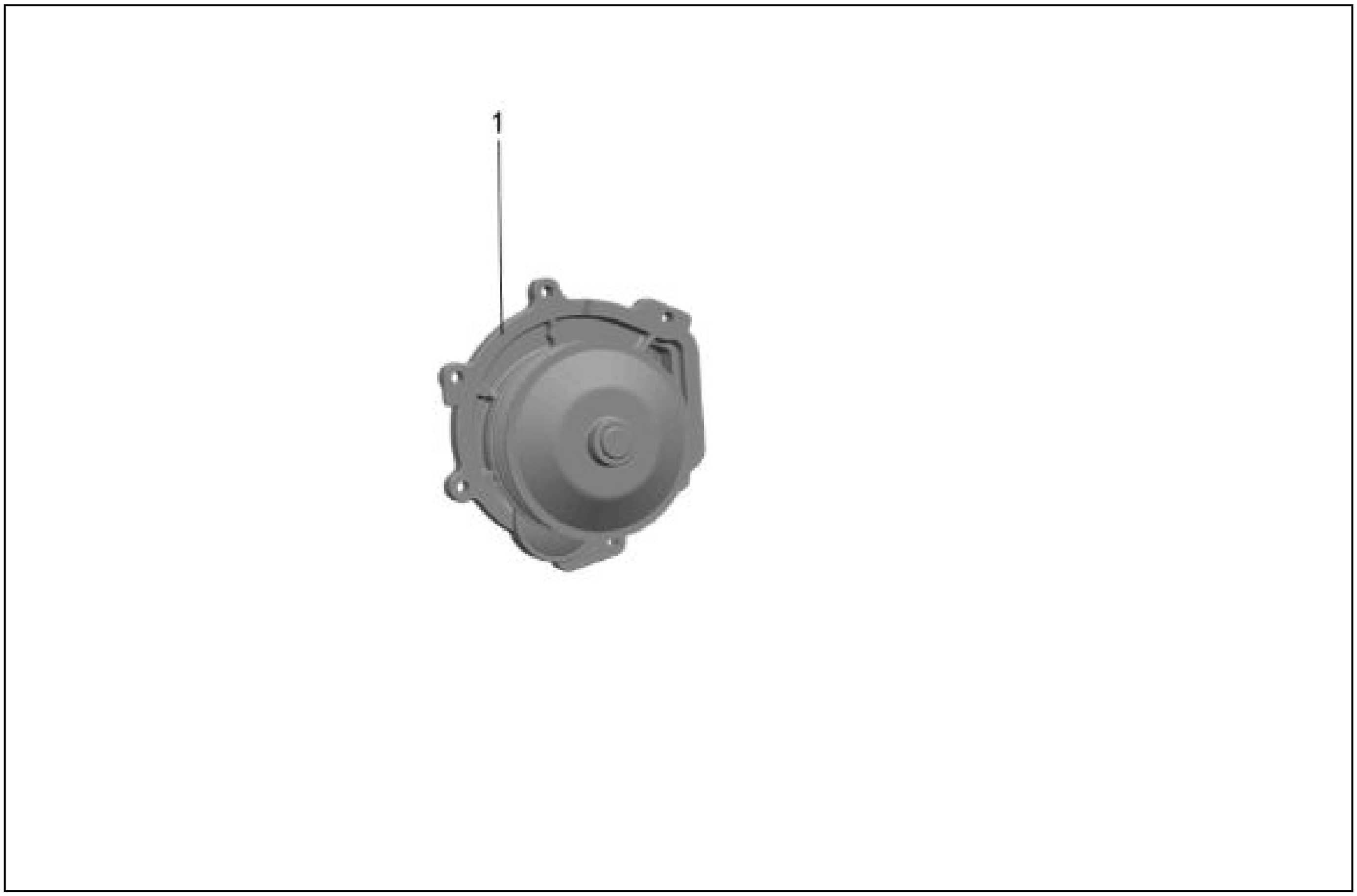
- **Engine: Internal**
  - Improved engine coolant jacket that targets hot spots in the engine.
- **Engine Mounted Cooling**



6852839

- Conventional mechanical water pump (1).
- The engine coolant flow control valve (2) contains two rotary control valves. The flow control coolant valve and the main rotary coolant valve both eliminate the need for the conventional cooling system thermostat.
- Engine oil cooler (3) that uses coolant to heat or cool the engine oil as required.

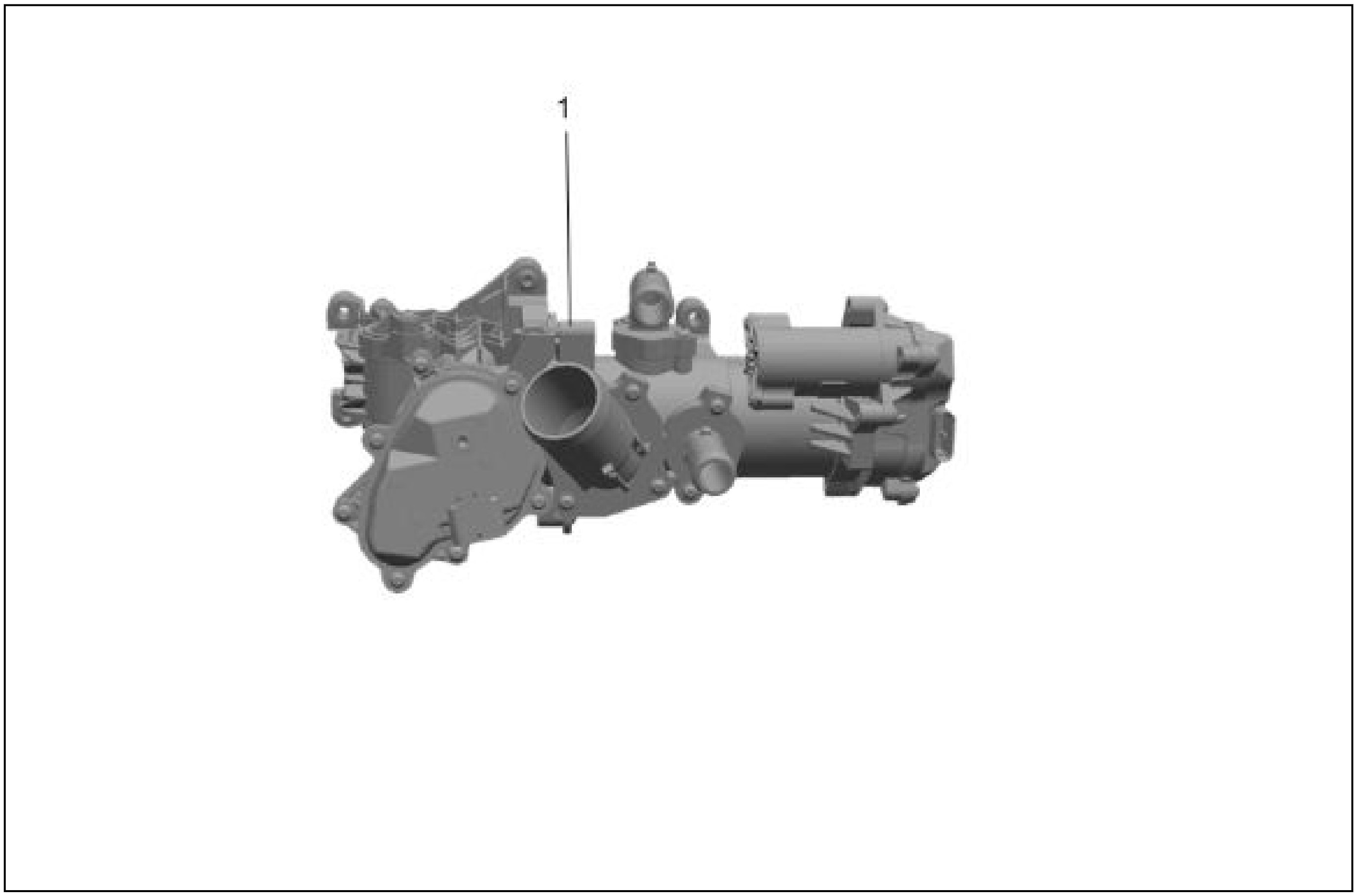
- **Temperature and Position Sensors**
  - The engine control module, which controls the complete active thermal management system using feedback from numerous sensors:
  - Engine Block Coolant Temperature Sensor
  - Engine Cylinder Head Metal Temperature Sensor
  - Engine Inlet Coolant Temperature Sensor
  - Engine Outlet Coolant Temperature Sensor
  - Engine Oil Temperature Sensor and Engine Oil Temperature Sensor 2
  - Transmission Oil Temperature Sensor
  - Radiator Outlet Coolant Temperature Sensor
  - Engine Coolant Flow Control Valve Position Sensor
- **Mechanical Water Pump**



6852815

- Mechanical water pump (1) provides constant coolant flow to the engine cylinder block, cylinder head and the engine coolant flow control valve.

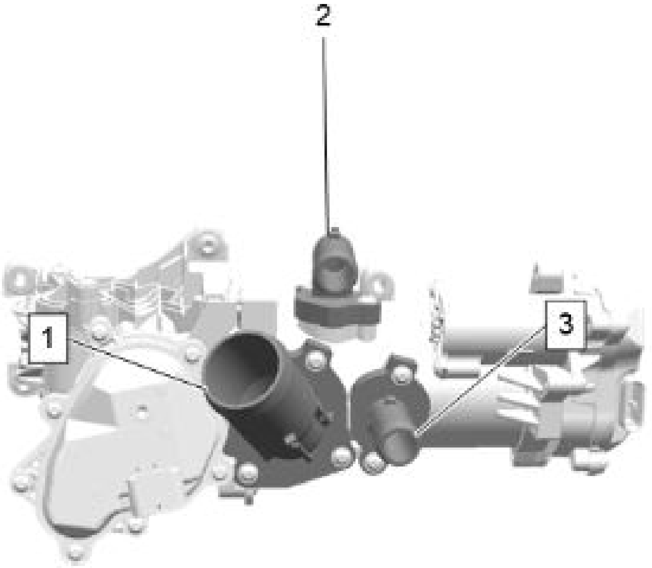
- **Engine Coolant Flow Control Valve**



6852697

- The engine coolant flow control valve (1) contains two coolant valves. The flow control valve and the main rotary valve.
- The flow control valve is located on the left side of the assembly. The engine coolant flow control valve controls coolant flow through the engine by throttling the coolant pump flow. This is done to prevent excess flow through the engine when not needed to improve fuel economy.

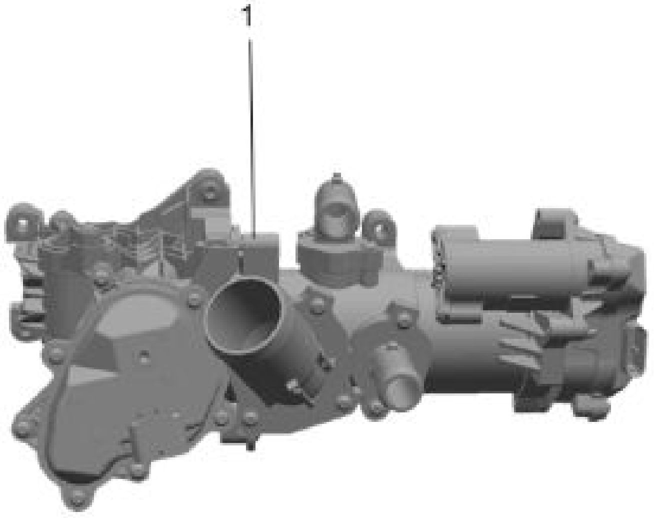
- **Engine Coolant Flow Control Valve (Coolant Flow Control Valve)**



6852802

- The coolant flow control valve controls coolant flow to the radiator as well as the engine and transmission oil heat exchangers eliminating the need for a conventional wax-operated thermostat and is controlled by the engine control module through sensor feedback. The large port on the left side of the valve (1) controls flow to the radiator. The small port on the top of the valve (2) is always open and flowing to the exhaust gas recirculation cooler, turbo and the heater core. The small port to the right side of the valve (3) allows flow to the engine oil and transmission oil heat exchangers

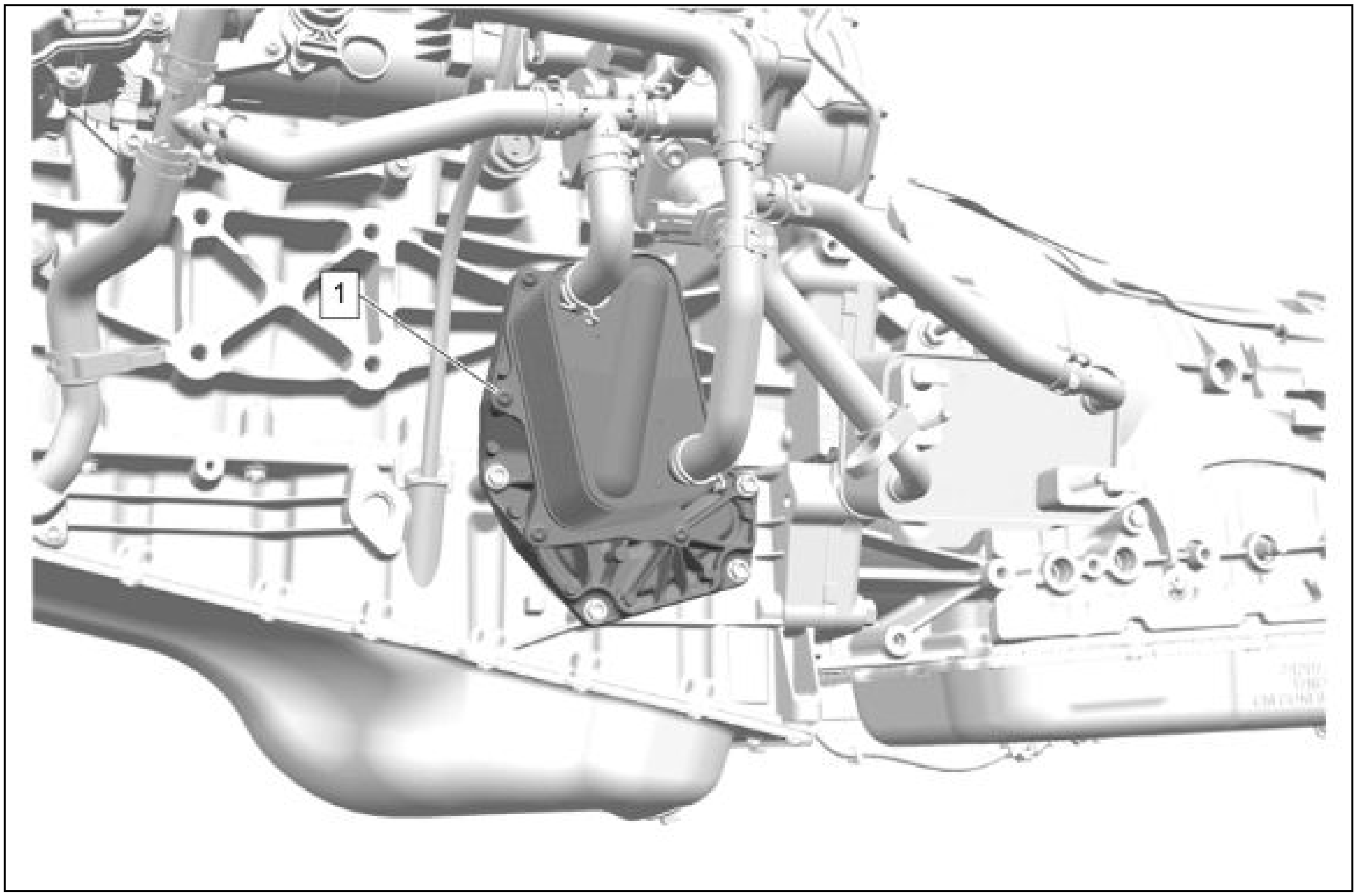
- **Engine Coolant Flow Control Valve (Main Rotary Coolant Valve)**



6852697

- The main rotary coolant valve is part of the engine coolant flow control valve and is located on the right side of the valve assembly (1). The main rotary valve controls coolant flow to the radiator, and oil heat exchangers.
- The combination of the engine coolant flow control valve and main rotary coolant valve is critical to achieving optimal combustion chamber temperatures as quickly as possible during engine warm up.

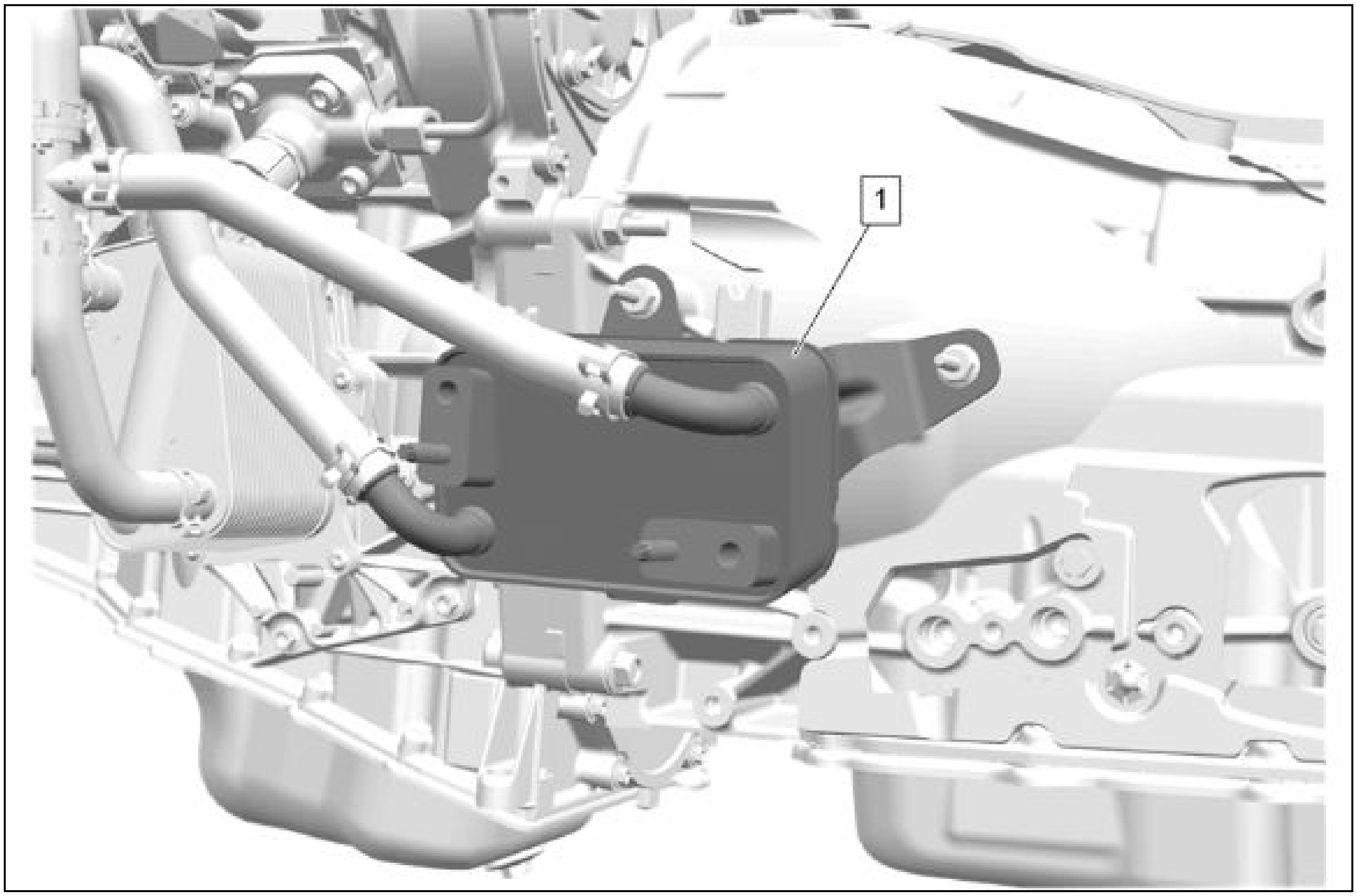
- **Engine Oil Cooler**



6852830

− The engine oil cooler (1) is a heat exchanger that is attached to the side of the engine and exchanges heat between the engine oil and engine coolant. The engine oil fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

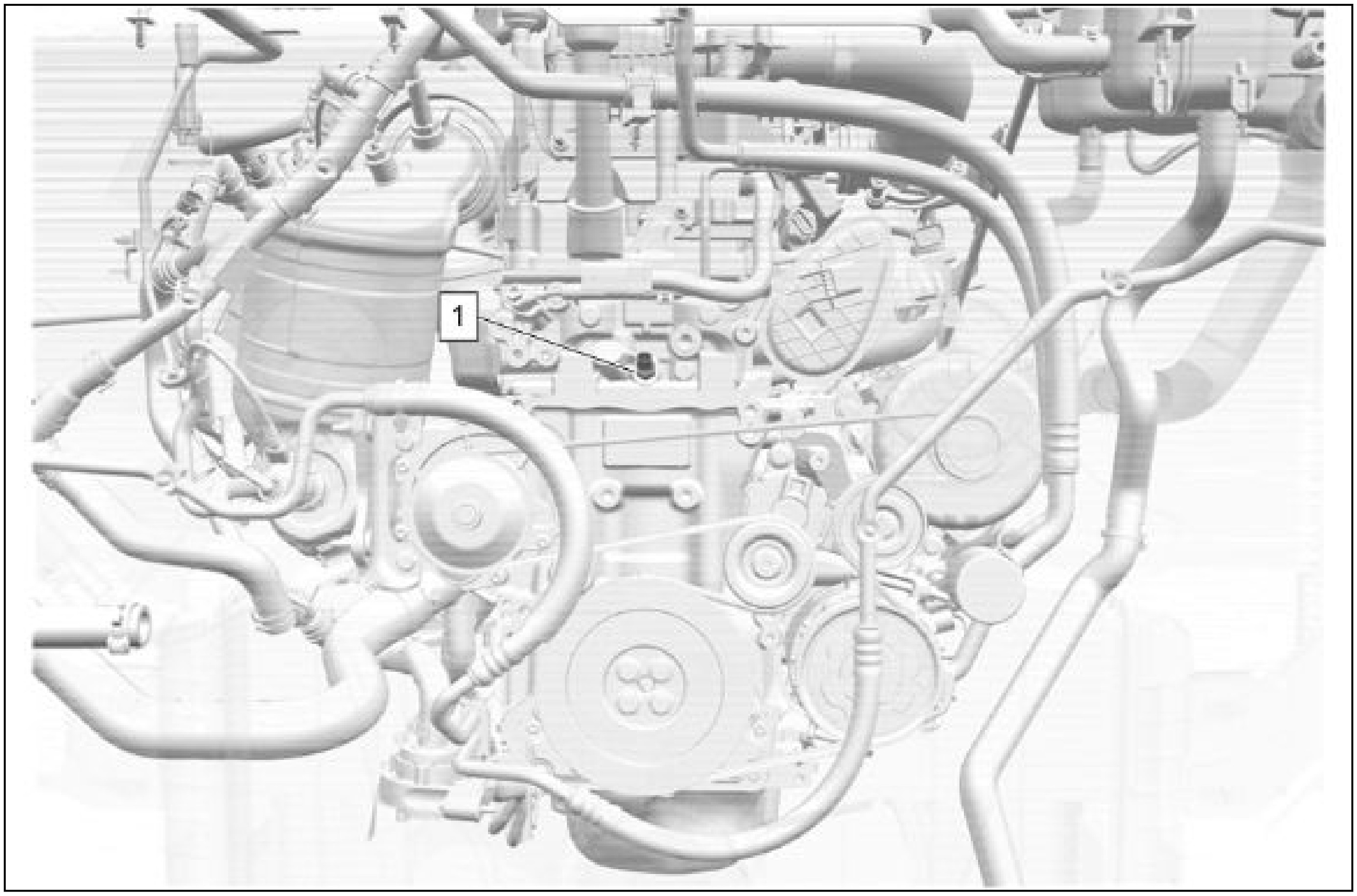
- **Automatic Transmission Fluid Cooling Exchanger**



- The automatic transmission fluid cooling exchanger (1) is a heat exchanger that is attached to the front of the transmission and exchanges heat between the transmission oil and engine coolant. The automatic transmission fluid cooling exchanger can flow no coolant, provide hot coolant for transmission oil heating (during engine warm-up) or provide cooled coolant for transmission oil cooling (under high thermal loads).

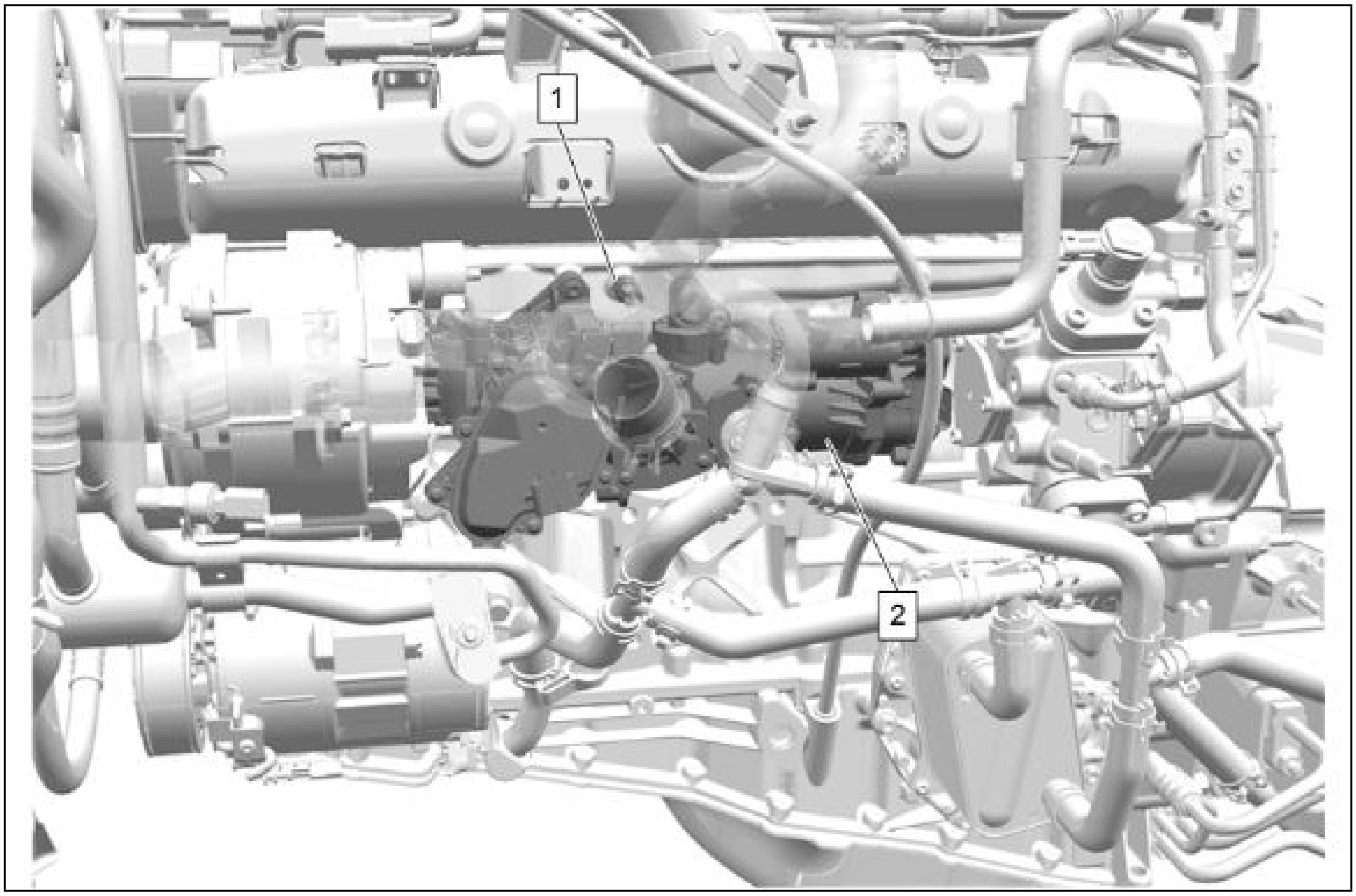
- **Automatic Coolant Service Fill Description**
  - Active thermal management systems are more difficult to fill with coolant than traditional thermostat based systems. Therefore the vehicle is equipped with an automatic coolant service fill that can be activated via the scan tool or driver controls that will cycle the electric water pump and coolant valves to de-aerate the coolant system.

## Component Locator - Engine View



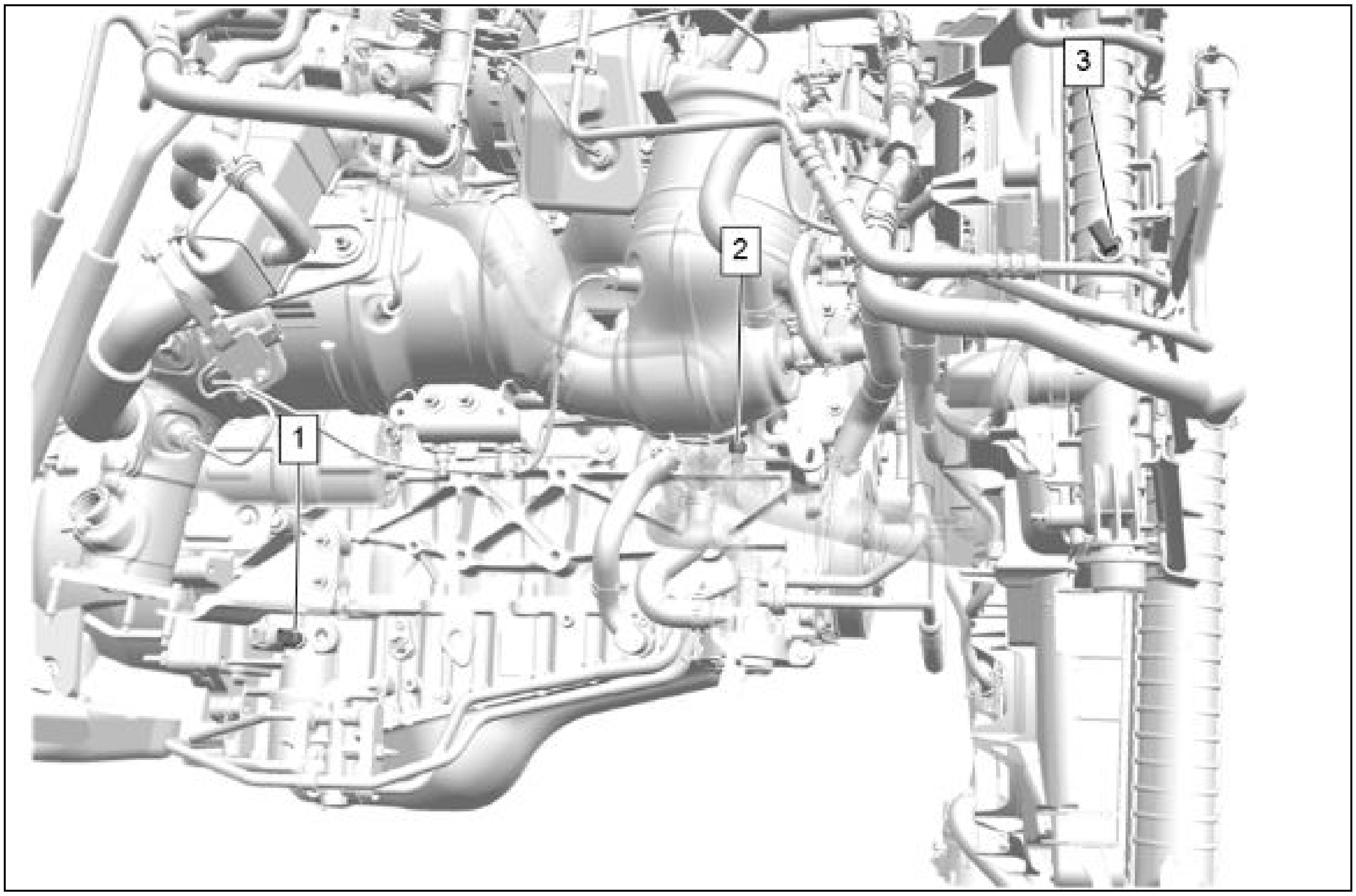
Front of engine view

| Callout | Scan Tool Reference | Service Information Part Name or Electronic Part Catalog Name |
|---|---|---|
| 1 | Cylinder Head Temperature Sensor | Engine Cylinder Head Metal Temperature Sensor |



Left side of engine view

| Callout | Scan Tool Reference | Service Information Part Name or Electronic Part Catalog Name |
|---|---|---|
| 1 | Engine Coolant Temperature Sensor 2 | Engine Outlet Coolant Temperature Sensor |
| 2 | Engine Coolant Control Valve Position Sensor | Part of Engine Coolant Flow Control Valve |



**Right side of engine view**

| Callout | Scan Tool Reference | Service Information Part Name or Electronic Part Catalog Name |
|---|---|---|
| 1 | Engine Oil Temperature Sensor and Engine Oil Temperature Sensor 2 | Engine Oil Temperature Sensor |
| 2 | Engine Coolant Temperature Sensor 1 | Engine Inlet Coolant Temperature Sensor |
| 3 | Radiator Coolant Temperature Sensor | Radiator Outlet Coolant Temperature Sensor |
| Internal to the transmission | Transmission Oil Temperature Sensor | Transmission Oil Temperature Sensor |

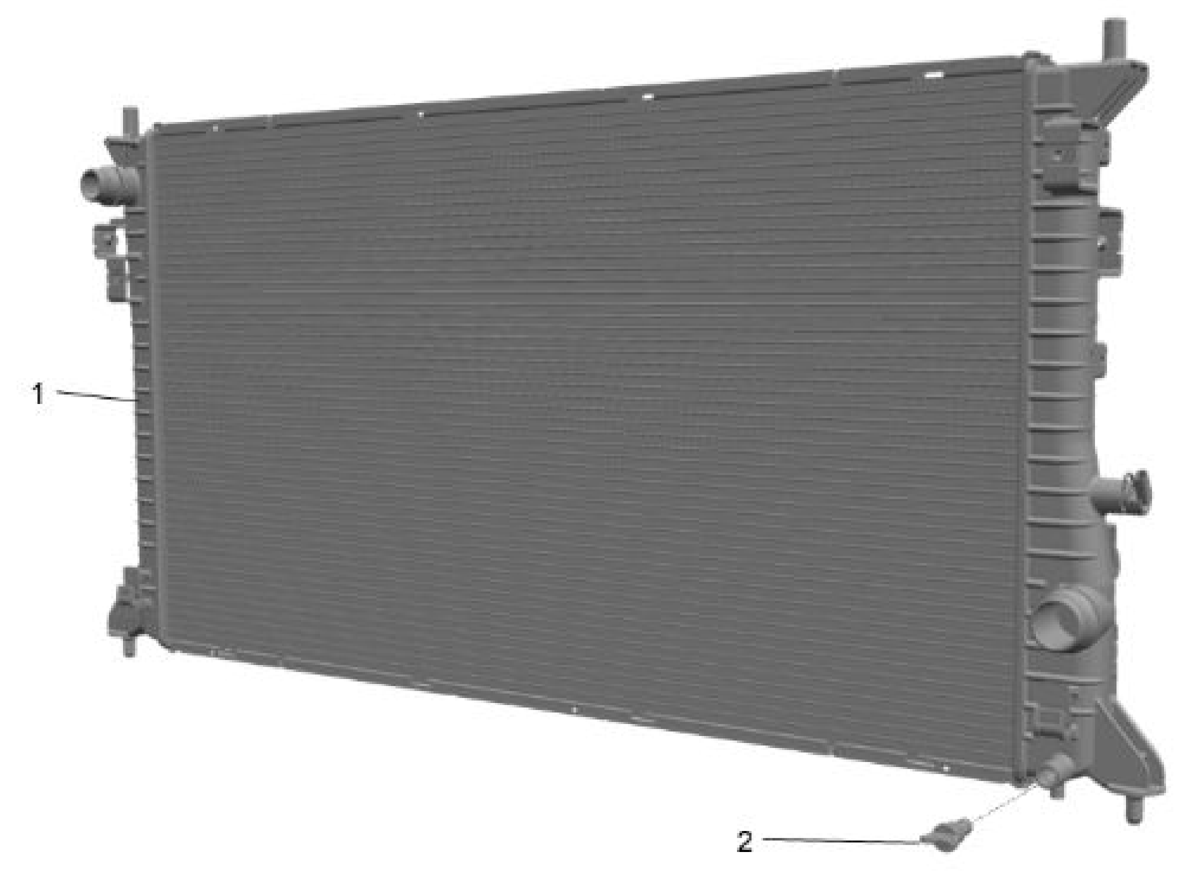
## Cooling System Components

- Various temperature and position sensors provide data back to the engine control module.
- Active thermal management still uses many of the conventional cooling system features, including:
  - Coolant
  - Coolant Hoses
  - Radiator
  - Radiator Bypass Route
  - Radiator Surge Tank
  - Surge Tank Pressure Cap
  - Engine Coolant Indicators
  - Air Baffles/Guides and Seals
  - Cabin Heater Core Route, if equipped with Rear Cabin Heater

### Coolant

The engine coolant is a solution made up of a 50-50 mixture of DEX-COOL® and suitable drinking water. The coolant solution transfers heat between the components of the engine heating/cooling system.

## Radiator

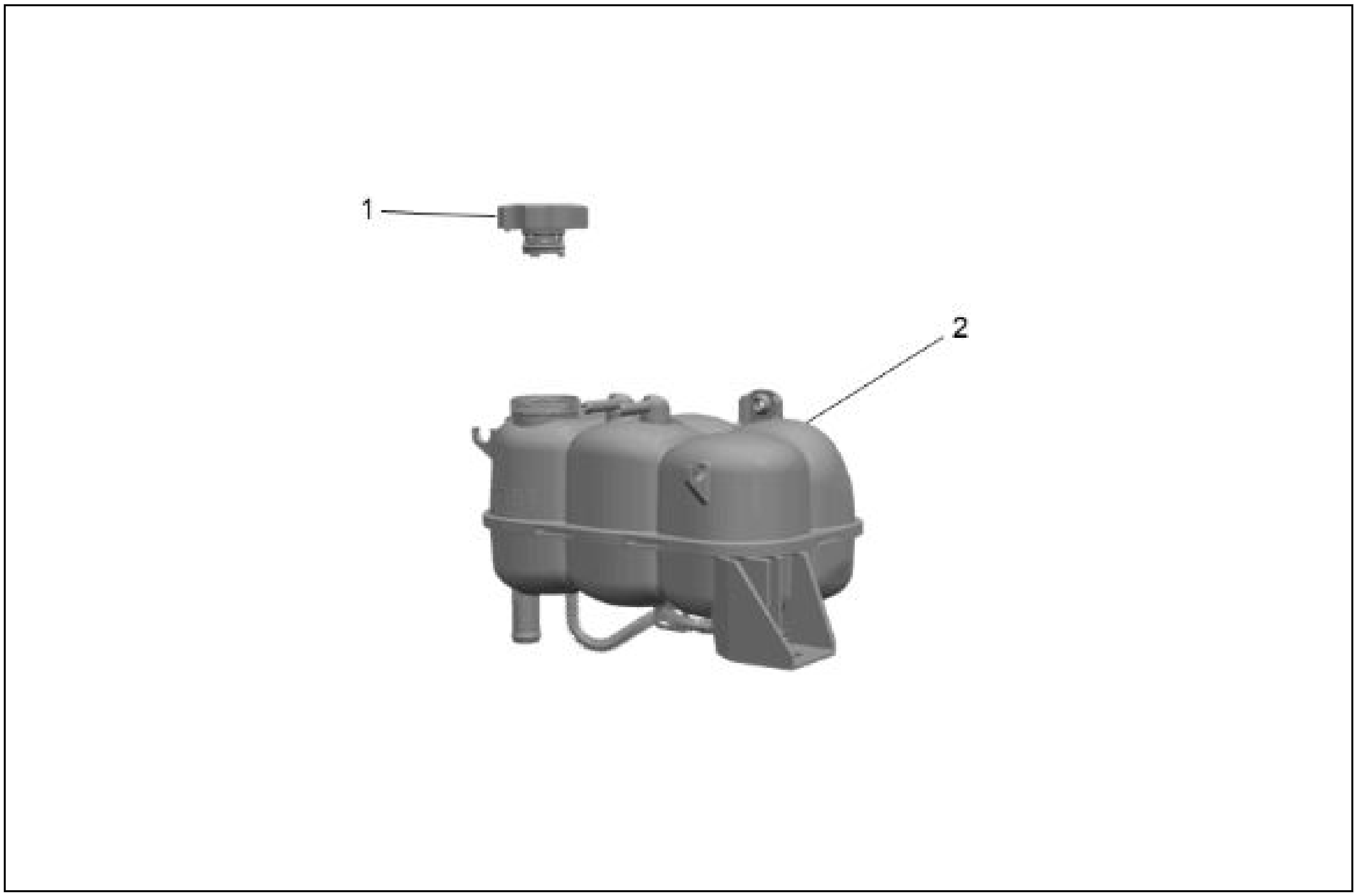


6637073

The radiator (1) is a heat exchanger. It consists of a core and two end tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of the tubes to improve heat transfer to the atmosphere. The inlet and outlet tanks are a molded high temperature nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core. The fins on the core transfer heat from the coolant passing through the tubes. Air passing between the fins absorbs the heat and cools the coolant. Heat is removed from the coolant as the coolant passes through the radiator.

The radiator also has a drain cock (2) located in the bottom of the left or right side tank. The drain cock unit includes the drain cock and drain cock seal.

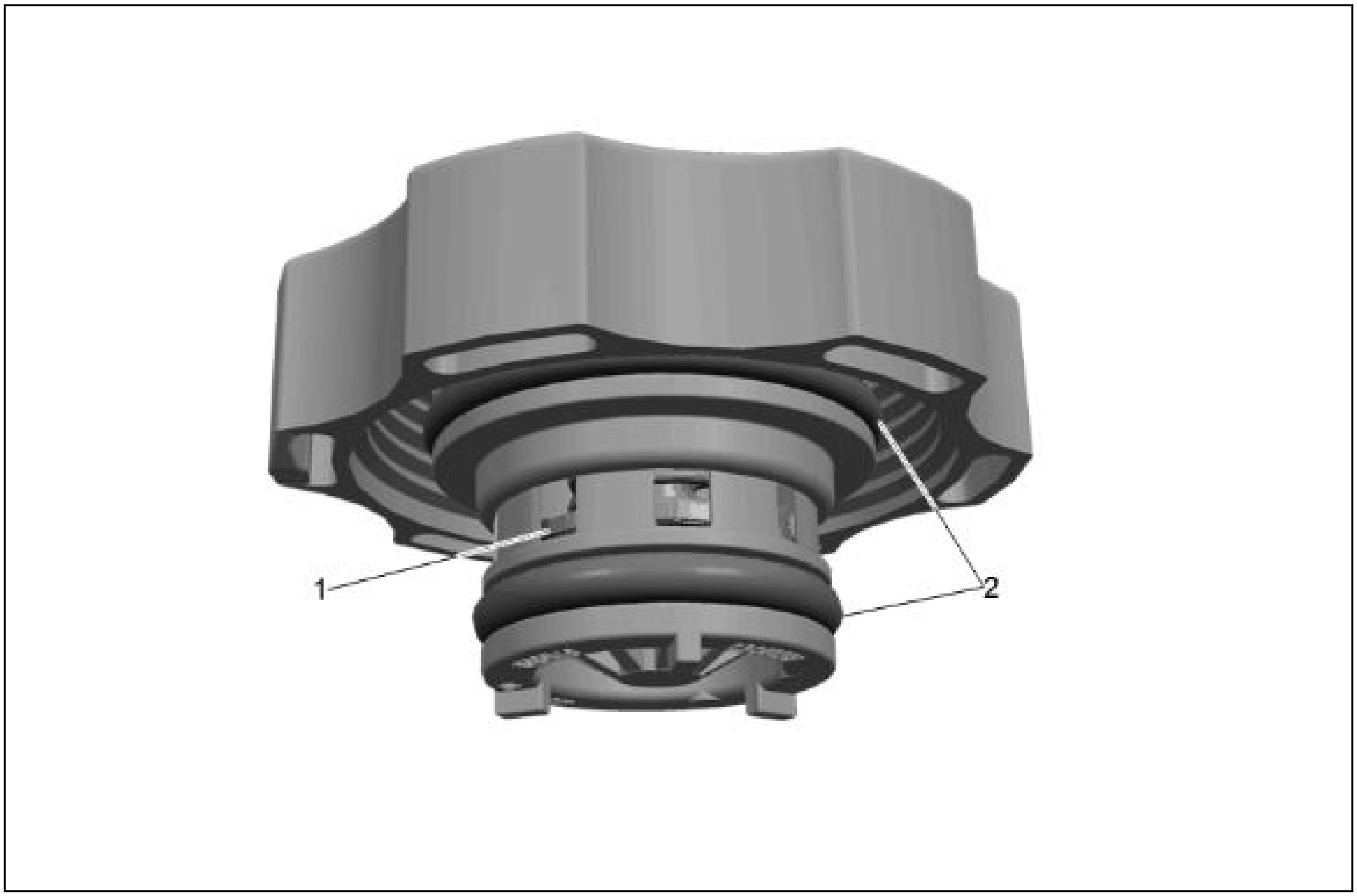
## Radiator Surge Tank



6852834

The radiator surge tank (2) is a plastic tank with a pressure cap (1) mounted to it. The tank is mounted at a point higher than all other coolant passages. The surge tank provides an air space in the cooling system. The air space allows the coolant to expand and contract. The surge tank also provides a coolant fill point and a central air bleed location. During vehicle use, the coolant heats and expands. The coolant that is displaced by this expansion flows into the surge tank. As the coolant circulates, air is allowed to exit. This is an advantage to the cooling system. Coolant without air bubbles absorbs heat much better than coolant with air bubbles.

### Radiator Surge Tank Cap

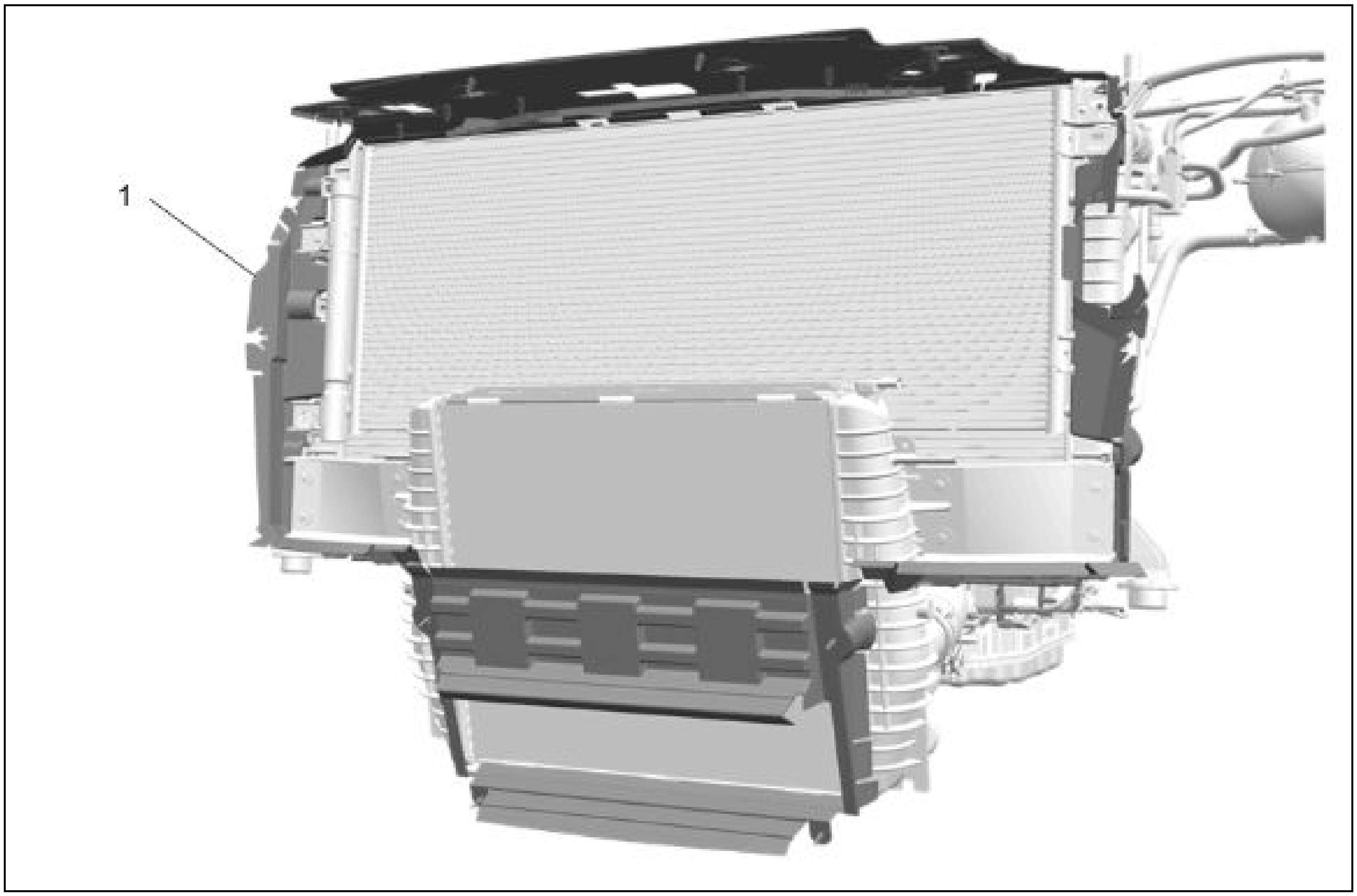


6636994

The radiator surge tank cap is a pressure cap that seals (2) and pressurizes the cooling system. It contains a blow-off or pressure valve (1) and a vacuum or atmospheric valve.

- The pressure valve is held against its seat by a spring and protects the radiator by relieving pressure if it exceeds 20 psi.
- The vacuum valve is held against its seat by a spring, which permits opening of the valve to relieve vacuum created in the cooling system as it cools off. The vacuum, if not relieved, could cause the radiator hoses to collapse.
- The pressure cap allows pressure in the cooling system to build up. As the pressure builds, the boiling point of the coolant goes up as well. Therefore, the coolant can be safely run at a temperature higher than the boiling point of the coolant at atmospheric pressure.
- The hotter the coolant is, the faster the heat moves from the radiator to the cooler passing air. However, if the pressure exceeds the strength of the spring, the pressure valve rises so that the excess pressure can escape.
- When the engine cools down, the temperature of the coolant drops and a vacuum is created in the cooling system. This vacuum causes the vacuum valve to open, allowing outside air into the cooling system. This equalizes the pressure in the cooling system with atmospheric pressure, thus preventing the radiator hoses from collapsing.

### Air Baffles/Guides and Seals



The cooling system uses deflectors, air baffles/guides and air seals to increase cooling system capability. Deflectors are installed under the vehicle to redirect airflow beneath the vehicle and through the radiator to increase engine cooling. Air baffles/guides are also used to direct airflow through the radiator and increase cooling capability. Air seals prevent air from bypassing the radiator and air conditioning condenser, and prevent recirculation of hot air for better hot weather cooling and air conditioning condenser performance.

### Engine Coolant Indicators

The instrument panel cluster shows the engine temperature on the temperature gauge. The value is sent on the data communication line from engine control module. When the coolant temperature is hot, the instrument panel cluster receives a discrete input from engine control module requesting illumination.

The instrument panel cluster performs the display test at the start of each ignition cycle. The instrument panel cluster illuminates the TEMP indicator.

### Coolant Heater (If Equipped)

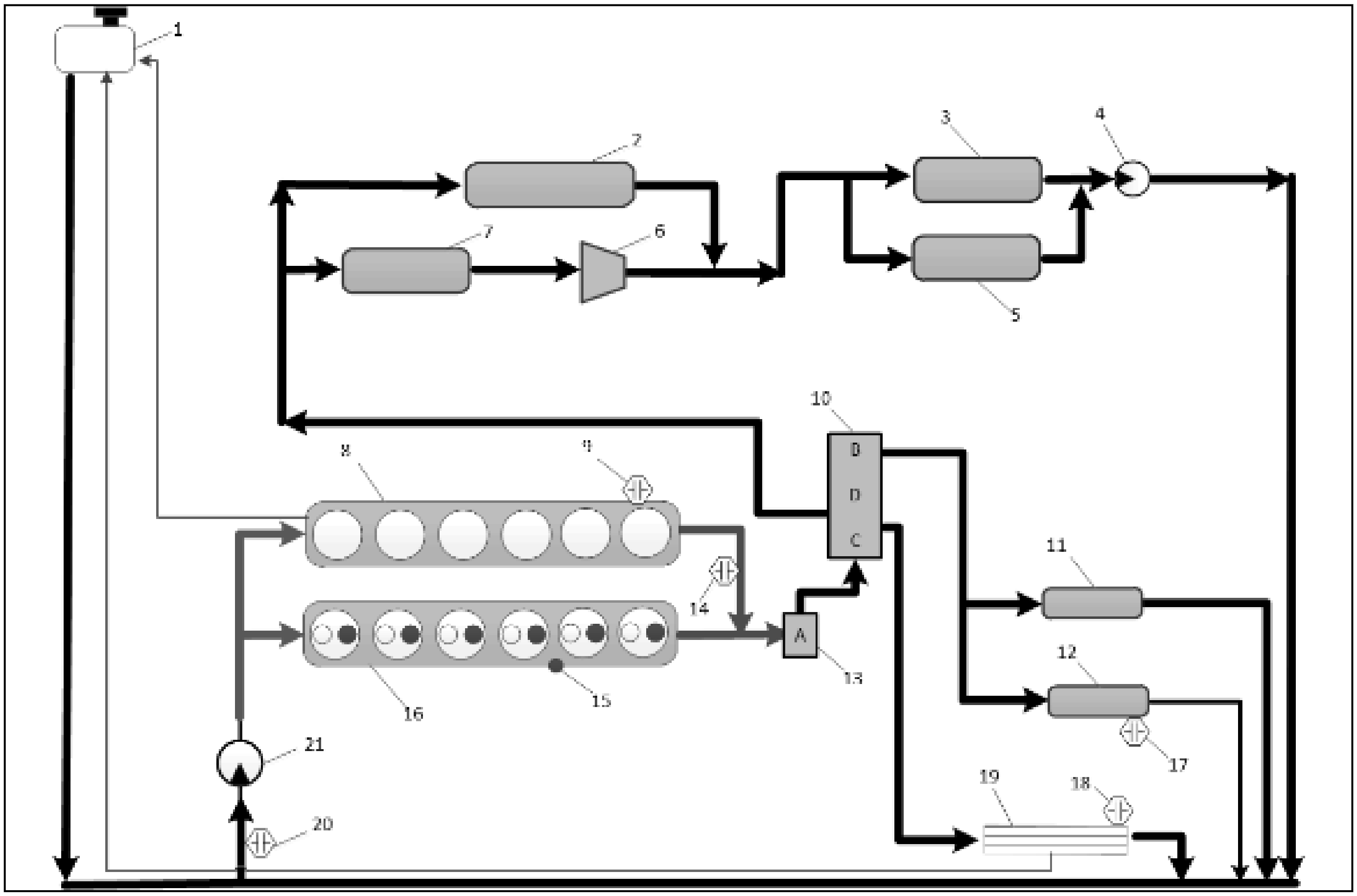
The optional coolant heater (RPO K05) operates using 110 V AC external power and is designed to warm the coolant in the engine block area for improved starting in very cold weather. The coolant heater also helps reduce fuel consumption when a cold engine is warming up. The unit is equipped with a detachable AC power cord. There is an internal thermal switch in the coolant heater cord that prevents operation above **-18°C (0°F)**. A weather shield on the cord is provided to protect the plug when not in use.

### Cooling Cycle

Coolant flows from the electric water pump outlet and into the engine circuit and turbocharger cooling circuit. It also provides cooled coolant flow from the radiator to the engine coolant flow control valve to be used as necessary to manage transmission and engine oil temperature. In the engine, the coolant flow direction and volume is controlled by the engine coolant flow control valve and the block control valve to provide necessary flow for optimal engine block, cylinder head, and exhaust manifold cooling. The engine coolant flow control valve can also provide the transmission and engine oil circuits warmed coolant from the engine to optimize the oil temperatures. Excess heat is removed from the coolant in the radiator and the cooled coolant returns to the electric water pump.

### Mode 1 (Low Flow):

**Flow Diagram - Mode 1**



6864586

(1) Surge Tank
(2) LP EGR
(3) Heater Core
(4) Heater Coolant Pump
(5) Auxiliary Heater Core (If Equipped)
(6) Turbocharger
(7) HP EGR
(8) Cylinder Head
(9) Engine Cylinder Head Metal Temperature Sensor
(10) Main Rotary Valve
(11) Automatic Transmission Fluid Cooling Exchanger
(12) Engine Oil Cooler
(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump

Valve Port A

Valve Port B

Valve Port C

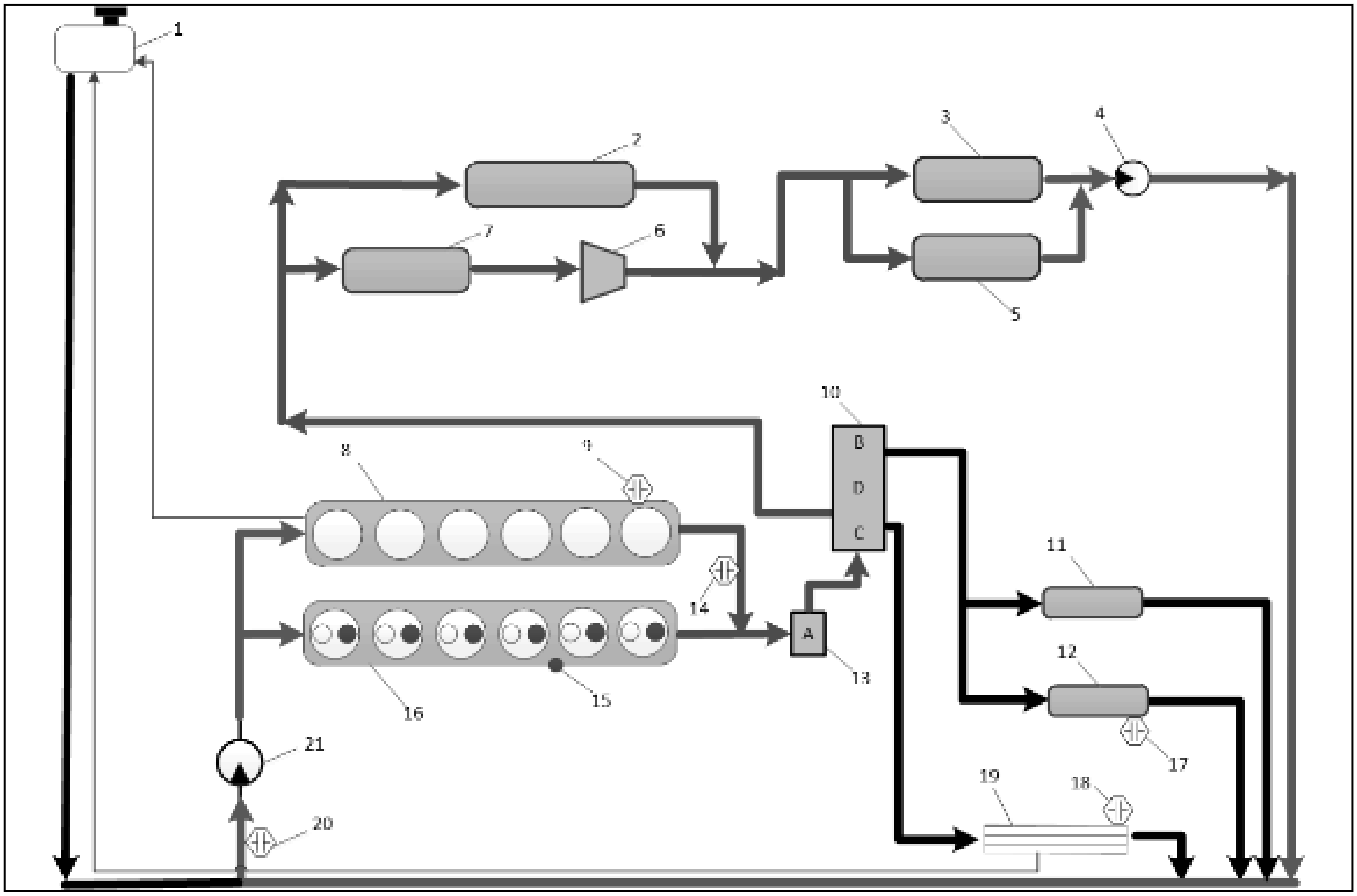
Valve Port D

If the engine is started cold, the system will go to low flow mode, which means the flow control valve allows just enough flow for the sensors to provide reliable information on the state of the system. As the engine warms up, the heat stays around the combustion chamber and is not taken away by coolant flow. Low flow mode is the fastest method for engine warm up. Low flow mode will not enable if the interior HVAC is turned on.

**Flow Diagram - Mode 2**

| COMPONENT | CONDITION |
|---|---|
| Heater Coolant Pump | Low Speed, Low Flow |
| Main Rotary Coolant Valve | Low Speed, Low Flow |
| Block Rotary Coolant Control Valve | Low Speed, Low Flow |

### Mode 2 (Engine Warm Up With Cabin Heating Only):



6864979

(1) Surge Tank

(2) LP EGR

(3) Heater Core

(4) Heater Coolant Pump

(5) Auxiliary Heater Core (If Equipped)

(6) Turbocharger

(7) HP EGR

(8) Cylinder Head

(9) Engine Cylinder Head Metal Temperature Sensor

(10) Main Rotary Valve

(11) Automatic Transmission Fluid Cooling Exchanger

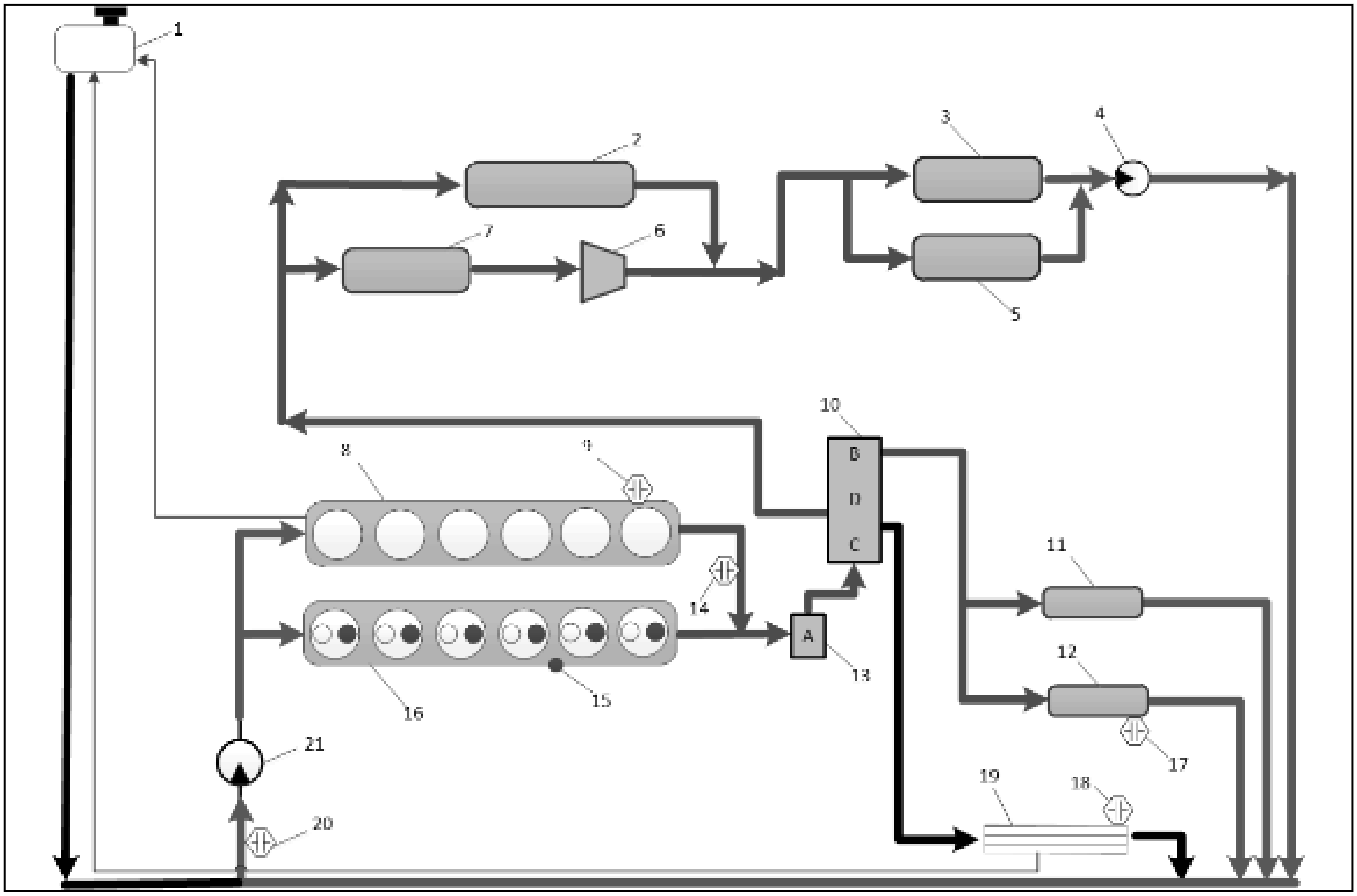
(12) Engine Oil Cooler
(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

When the driver requests passenger compartment heat or windshield defrosting, coolant flow is controlled to maximize coolant heat transfer from engine to passenger compartment. This heater circuit is fed by a combination of warmed coolant from the cylinder head, high pressure EGR valve, and turbocharger. The engine coolant main rotary valve is closed to the radiator and oil heat exchanger at this time. The warmed coolant goes through the low pressure EGR cooler then to the passenger compartment heater core. Heater core flow returns to the mechanical water pump.

**Flow Diagram - Mode 3**

| COMPONENT | CONDITION |
|---|---|
| Heater Coolant Pump | Low Speed or Speed-Controlled to Heater Core Demand |
| Main Rotary Coolant Valve | Low Speed, Low Flow |
| Block Rotary Control Valve | Low Speed, Low Flow |

## Mode 3 (Cabin Heating with Oil Warming):



6864983

(1) Surge Tank
(2) LP EGR
(3) Heater Core
(4) Heater Coolant Pump
(5) Auxiliary Heater Core (If Equipped)
(6) Turbocharger
(7) HP EGR
(8) Cylinder Head
(9) Engine Cylinder Head Metal Temperature Sensor
(10) Main Rotary Valve
(11) Automatic Transmission Fluid Cooling Exchanger
(12) Engine Oil Cooler
(13) Flow Control Valve

(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

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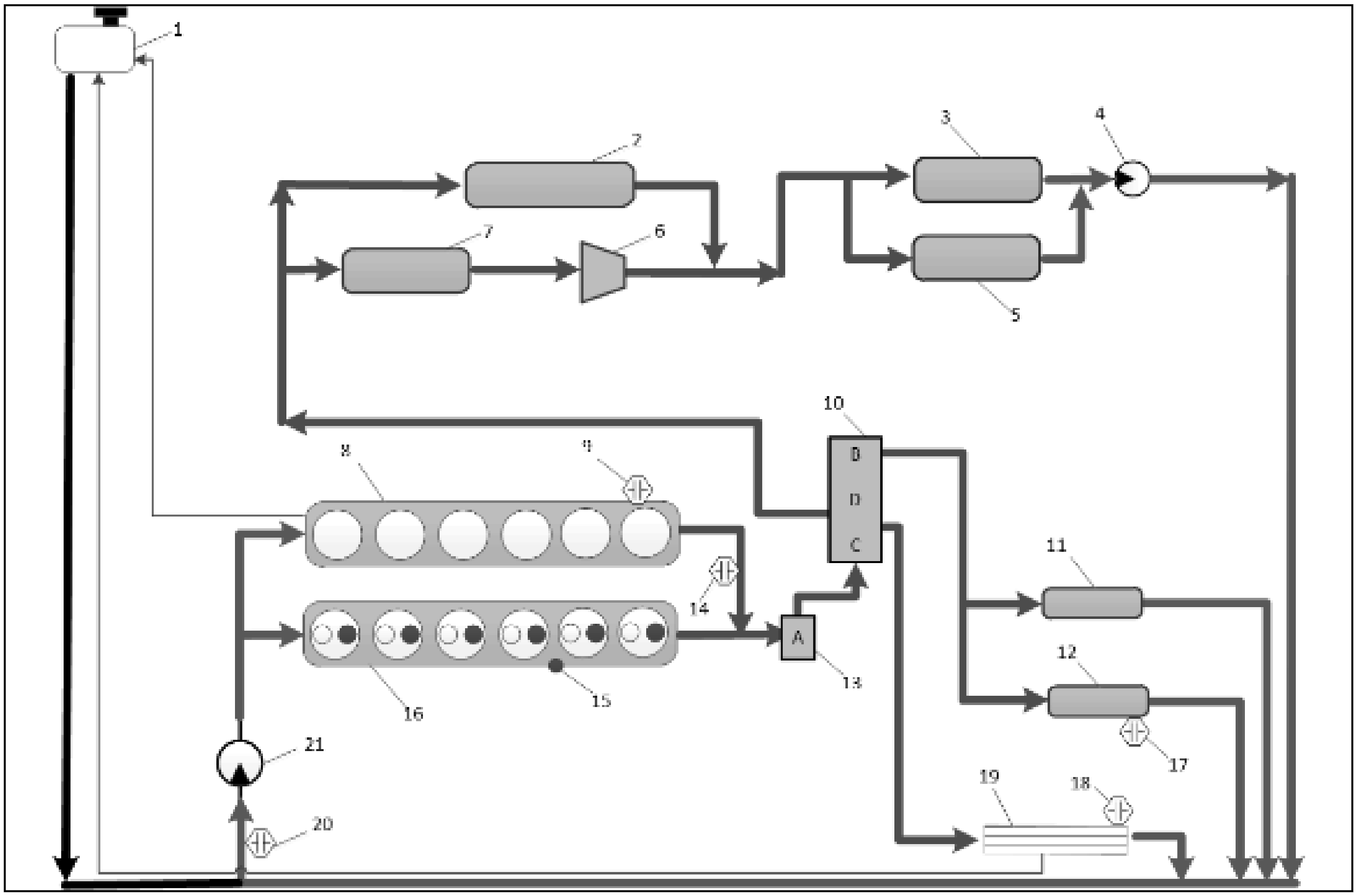
The cylinder head, turbocharger, and EGR cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core, if requested. At this point, the combustion chamber temperature has reached a high enough temperature that some heat can be transferred to the engine or transmission oil. Based on engine temperature, the engine coolant main rotary valve will control flow through the oil heat exchanger in a ratio necessary to warm the oil. Coolant flow from the engine and heat exchangers returns to the mechanical water pump.

| COMPONENT | CONDITION |
|---|---|
| Heater Coolant Pump | Speed-Controlled to Engine Demand |
| Main Rotary Coolant Valve | Bypass Radiator |
| Block Rotary Control Valve | Position-Controlled |

### Mode 4 (Engine-Demand Cooling With Cabin Heating And Oil Heating):

**Flow Diagram - Mode 4**



6864986

(1) Surge Tank

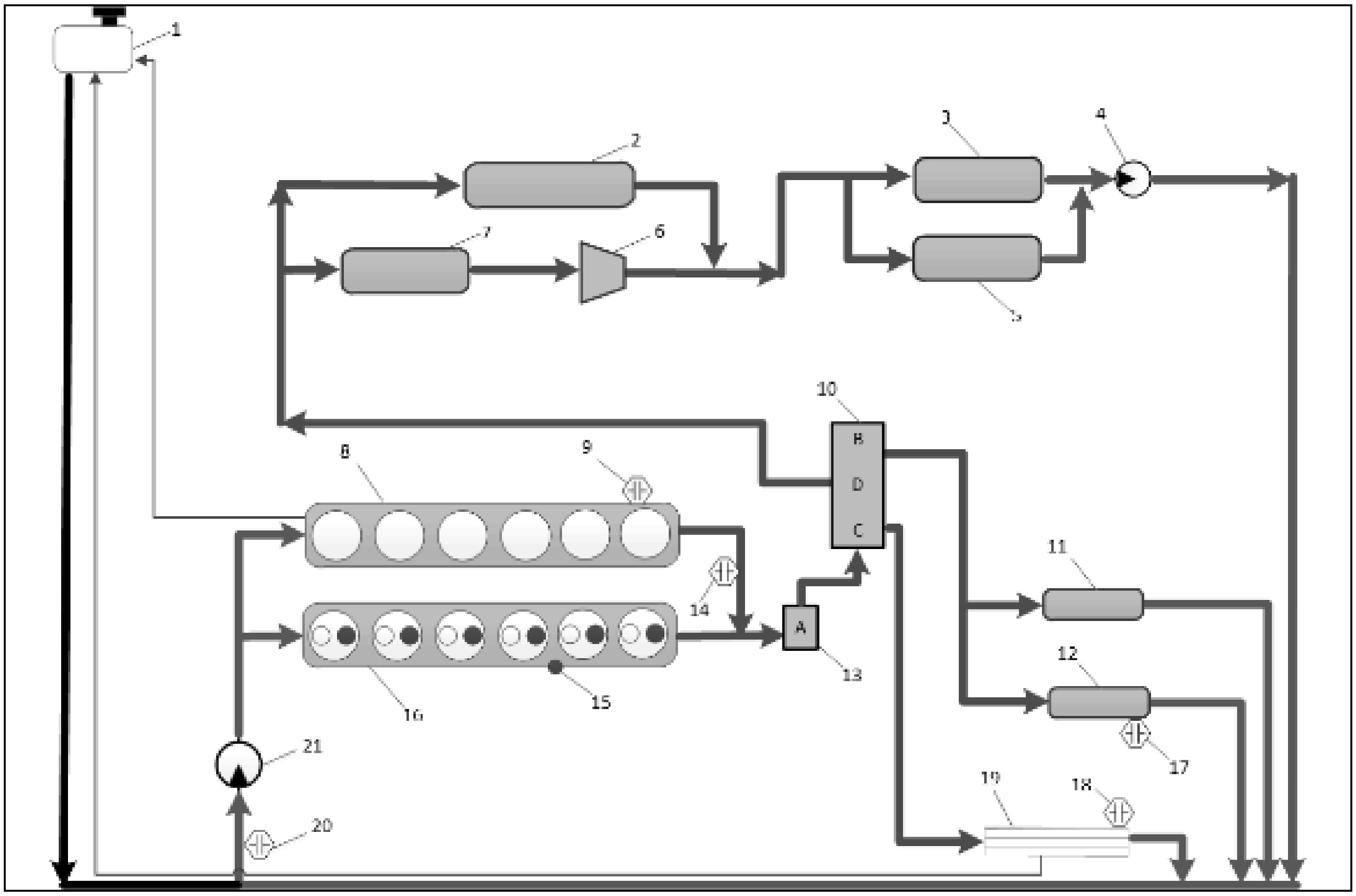
(2) LP EGR
(3) Heater Core
(4) Heater Coolant Pump
(5) Auxiliary Heater Core (If Equipped)
(6) Turbocharger
(7) HP EGR
(8) Cylinder Head
(9) Engine Cylinder Head Metal Temperature Sensor
(10) Main Rotary Valve
(11) Automatic Transmission Fluid Cooling Exchanger
(12) Engine Oil Cooler
(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

The cylinder head, turbocharger, and EGR cooler passages are still flowing and providing warmed coolant directly to the passenger compartment heater core. At this point, the combustion chamber temperature has reached its optimal temperature and the engine needs to dissipate heat through the radiator. Based on engine temperature, the engine coolant main rotary valve will control flow to the radiator to maintain optimal engine temperatures. Additionally, coolant flow will continue to flow to the engine/transmission oil heat exchangers. Engine oil and transmission oil can take significantly longer time to reach optimal temperatures after the engine is already warmed. Coolant flow from the radiator and heat exchangers returns to the mechanical water pump.

| COMPONENT | CONDITION |
|---|---|
| Heater Coolant Pump | Speed-Controlled to Engine Demand |
| Main Rotary Coolant Valve | Position-Controlled with Oil Heating |
| Block Control Valve | Position-Controlled |

### Mode 5 (After Run Cooling):

**Flow Diagram - Mode 5**



6864989

(1) Surge Tank
(2) LP EGR
(3) Heater Core
(4) Heater Coolant Pump
(5) Auxiliary Heater Core (If Equipped)
(6) Turbocharger
(7) HP EGR
(8) Cylinder Head
(9) Engine Cylinder Head Metal Temperature Sensor
(10) Main Rotary Valve
(11) Automatic Transmission Fluid Cooling Exchanger
(12) Engine Oil Cooler

(13) Flow Control Valve
(14) Engine Outlet Coolant Temperature Sensor
(15) Block Heater
(16) Engine Block
(17) Engine Oil Temperature Sensor
(18) Radiator Outlet Coolant Temperature Sensor
(19) Radiator
(20) Engine Inlet Coolant Temperature Sensor
(21) Mechanical Water Pump
Valve Port A
Valve Port B
Valve Port C
Valve Port D

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The after run mode is after key off and is needed only after extreme hot conditions with high engine, oil and coolant temperatures. For after run mode, the same valve positions are used as in engine demand cooling with cabin heating and the auxiliary water pump is used to provide flow to continue cooling.

| COMPONENT | CONDITION |
|---|---|
| Heater Coolant Pump | Low Speed |
| Main Rotary Coolant Valve | Max Cooling |
| Block Control Valve | Open |

**SHUT DOWN**

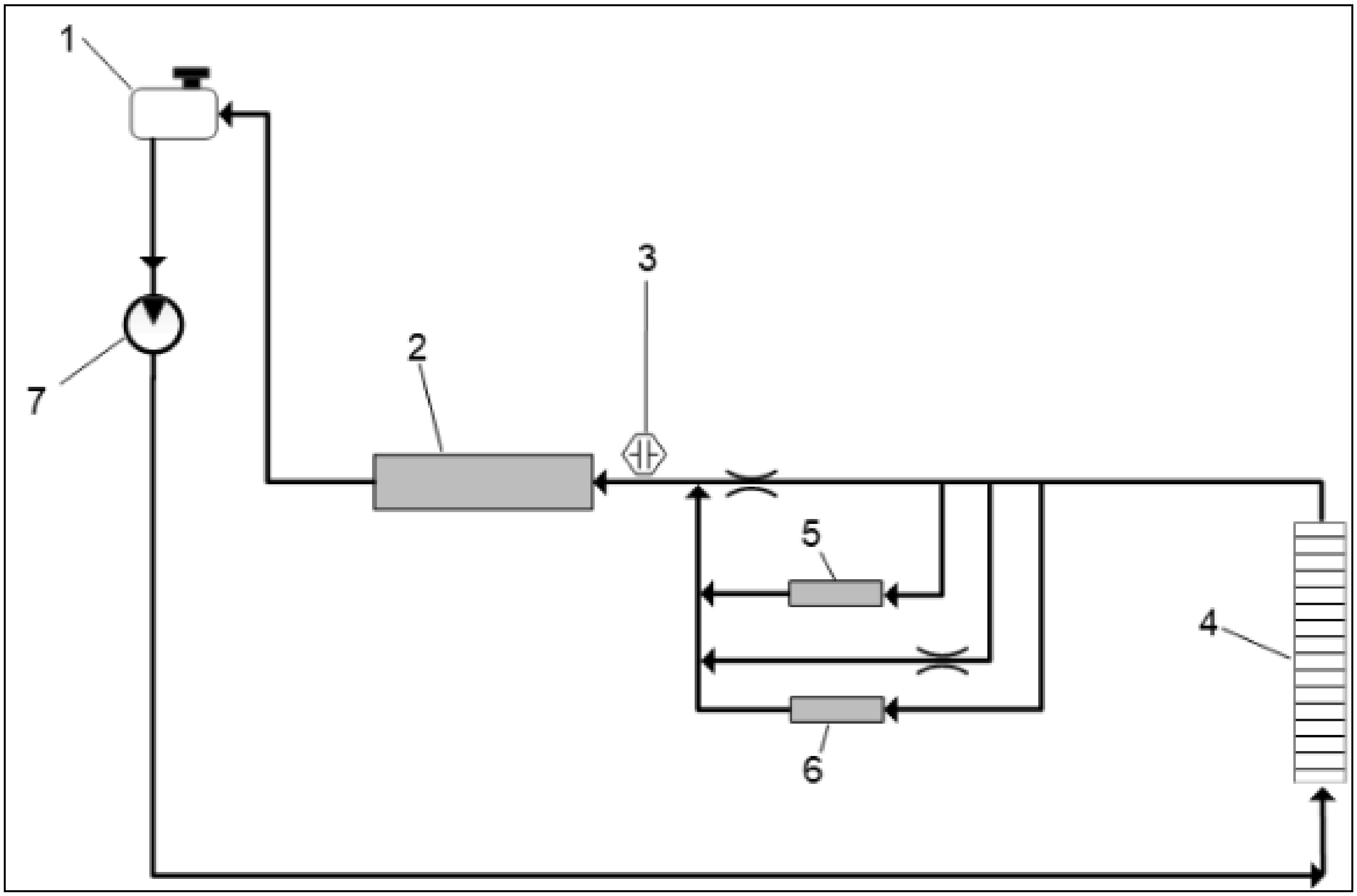
At engine shutdown, the control valves remain open to permit radiator flow and allow coolant service fill by gravity alone. Both control valves also undergo a diagnostic check after engine shutdown, which is sometimes audible.

## Cooling System Description and Operation (Low Temperature Coolant Loop)

### Secondary Low Temperature Coolant Loop

This vehicle utilizes a secondary coolant loop which circulates coolant to the water charge air cooler, fuel cooler, and the diesel exhaust fluid injector via an auxiliary low temperature radiator and chassis mounted electric coolant pump. Coolant flows from the low temperature auxiliary electric coolant pump to the low temperature radiator and then to the fuel cooler and diesel exhaust fluid injectors prior to entering the water charge air cooler. Coolant exiting the water charge air cooler flows to the low temperature surge tank and the then back to the low temperature auxiliary electric coolant pump. There is a coolant temperature sensor located near the inlet to the water charge air cooler.

### Low Temperature Coolant Loop

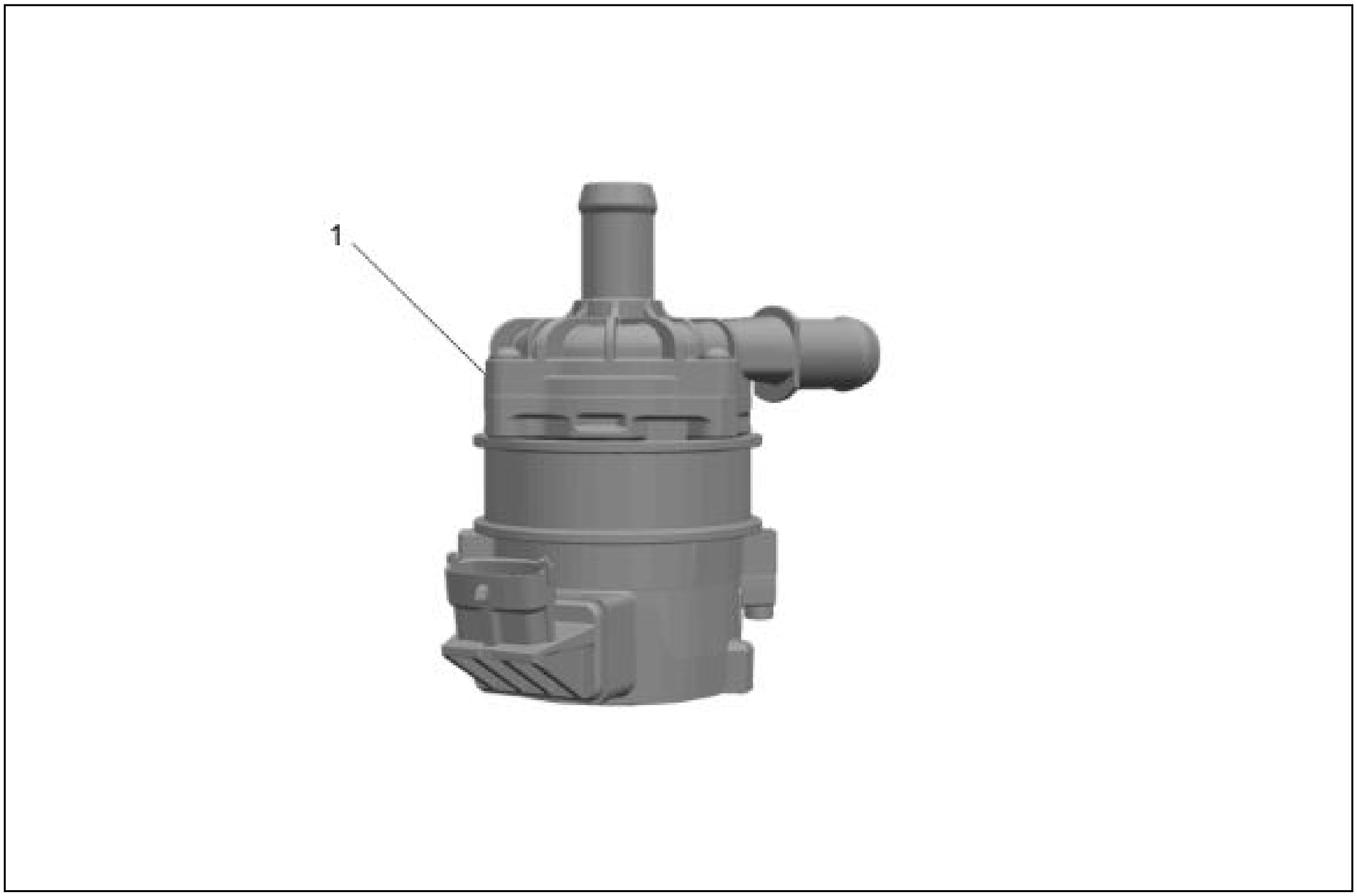


6890641

(1) Charge Air Cooler Surge Tank
(2) WCAC
(3) Engine Coolant Temperature Sensor
(4) Engine Auxiliary Radiator
(5) Reductant Fluid Injector (DEF Injector 1)
(6) Emission Reduction Fluid Secondary Injector (DEF Injector 2)
(7) Charge Air Cooler Coolant Pump

### The key features of the Secondary Low Temperature Coolant Loop include:

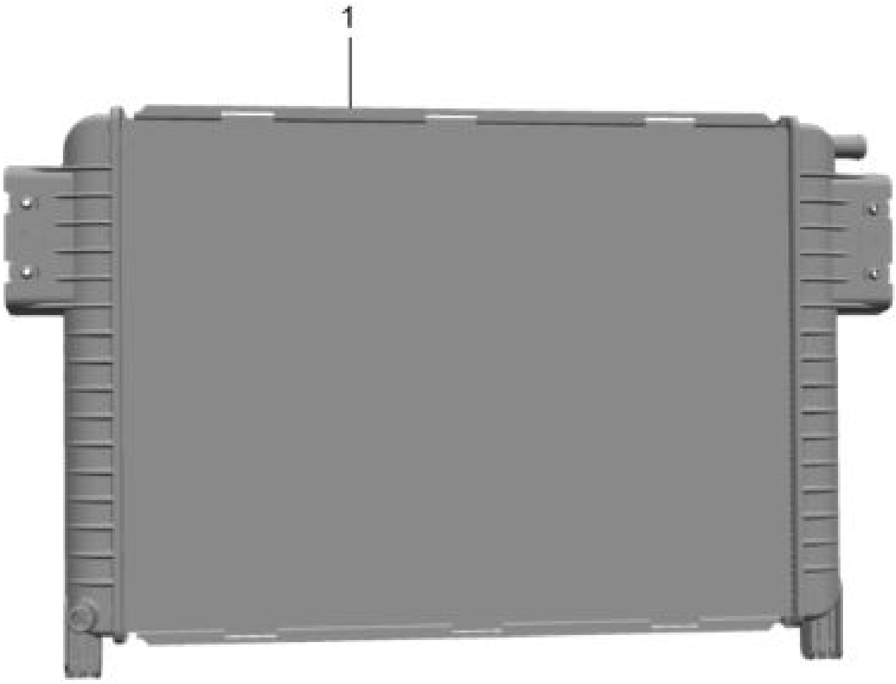
- **Low Temperature Auxiliary Coolant Pump**



6890642

- The charge air cooler coolant pump (1) provides coolant flow from the charge air cooler surge tank through the engine auxiliary radiator and on to the fuel cooler, diesel exhaust fluid injectors and water charge air cooler before returning to the charge air cooler surge tank.

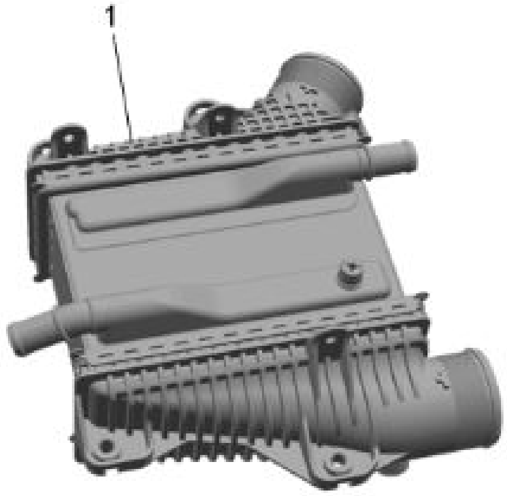
- **Low Temperature Radiator**



6890643

- The engine auxiliary radiator (1) is a heat exchanger. It consists of a core and two end tanks. The aluminum core is a tube and fin crossflow design that extends from the inlet tank to the outlet tank. Fins are placed around the outside of these tubes to improve heat transfer to the atmosphere. The inlet and outlet tanks are a molded high temperature nylon reinforced plastic material. A high temperature rubber gasket seals the tank flange edge to the aluminum core. The tanks are clamped to the core with clinch tabs. The tabs are part of the aluminum header at each end of the core.

- **Water Charge Air Cooler**



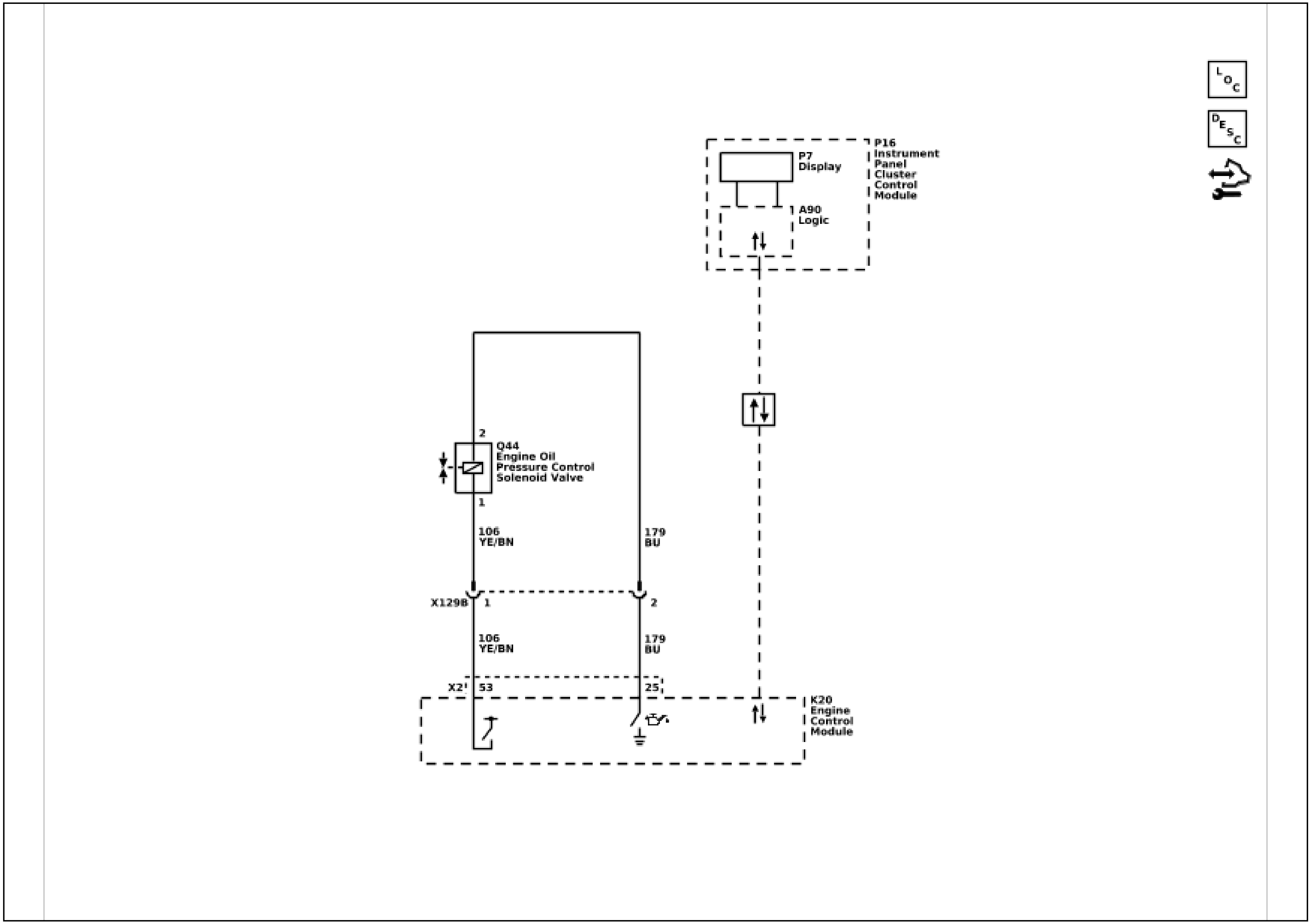
6890644

- The water charge air cooler (1) is a heat exchanger that uses coolant flowing through tubes to cool the air passing outside of those tubes. The air is cooled in the water charge air cooler after exiting the turbocharger before entering the intake manifold.

# Engine Mechanical - 3.0L Diesel

## Schematic and Routing Diagrams

## Engine Mechanical Schematics (Engine Oil Pressure Control (LZ0))

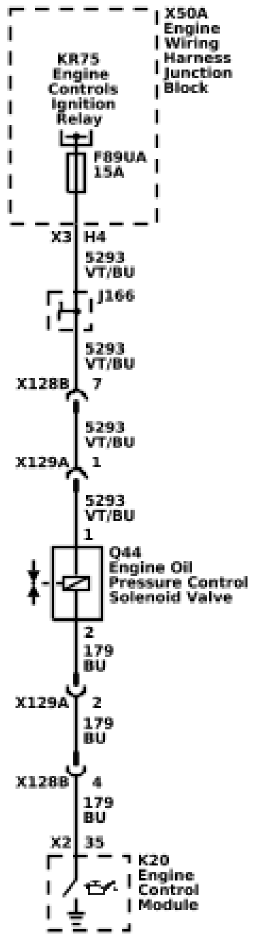

LOC
DESC
P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
Q44
Engine Oil
Pressure Control
Solenoid Valve
2
1
106
YE/BN
179
BU
X129B
1
2
106
YE/BN
179
BU
X2
53
25
K20
Engine
Control
Module

6885568

# Engine Mechanical - 5.3L or 6.2L

## Schematic and Routing Diagrams

## Engine Mechanical Schematics (Engine Oil Pressure Control (L87))

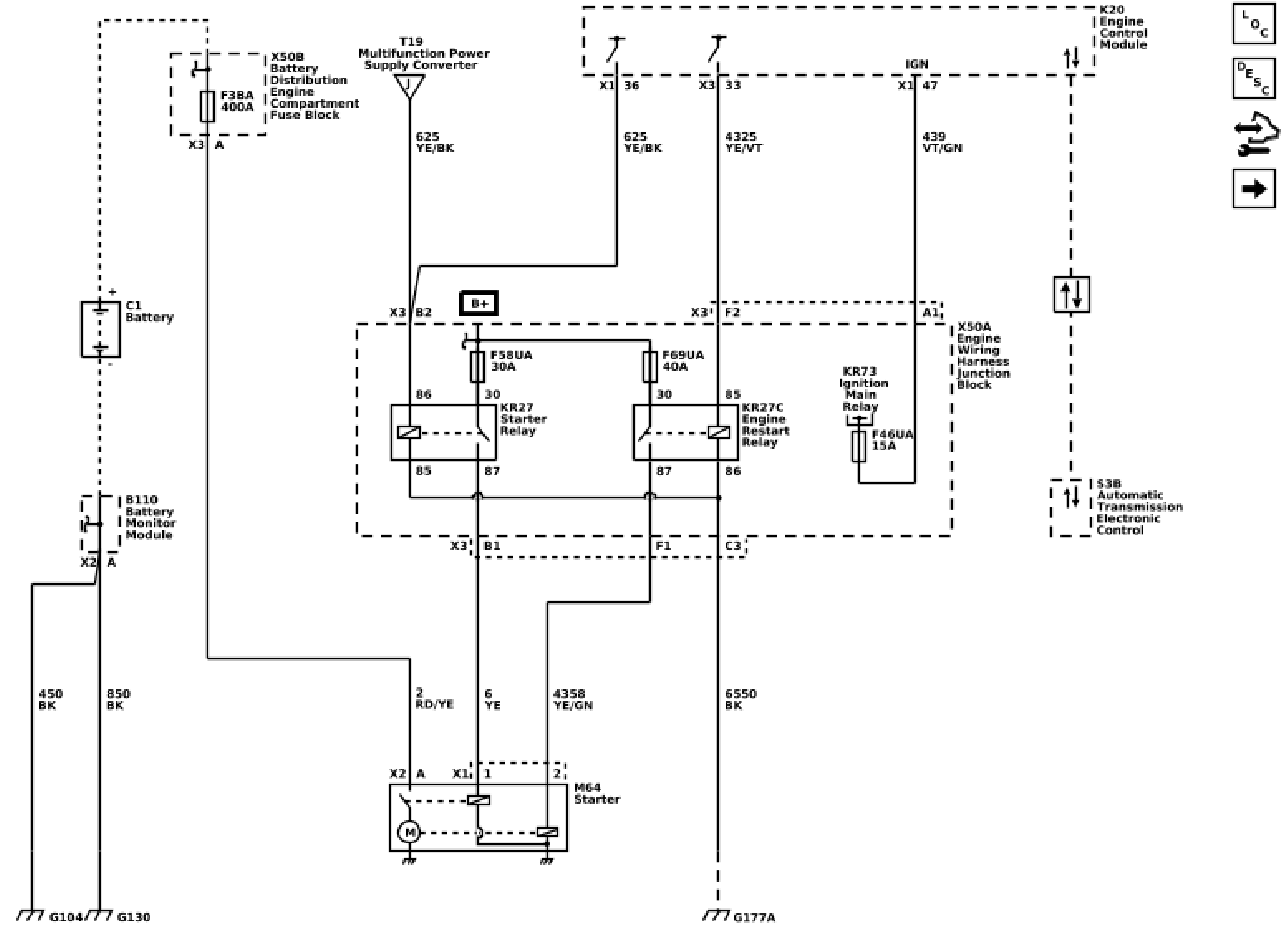

X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine
Controls
Ignition
Relay
F89UA
15A
X3
H4
5293
VT/BU
J166
5293
VT/BU
X128B
7
5293
VT/BU
X129A
1
5293
VT/BU
1
Q44
Engine Oil
Pressure Control
Solenoid Valve
2
179
BU
X129A
2
179
BU
X128B
4
179
BU
X2
35
K20
Engine
Control
Module

6885569

# Starting, Charging, and Low Voltage Energy Storage

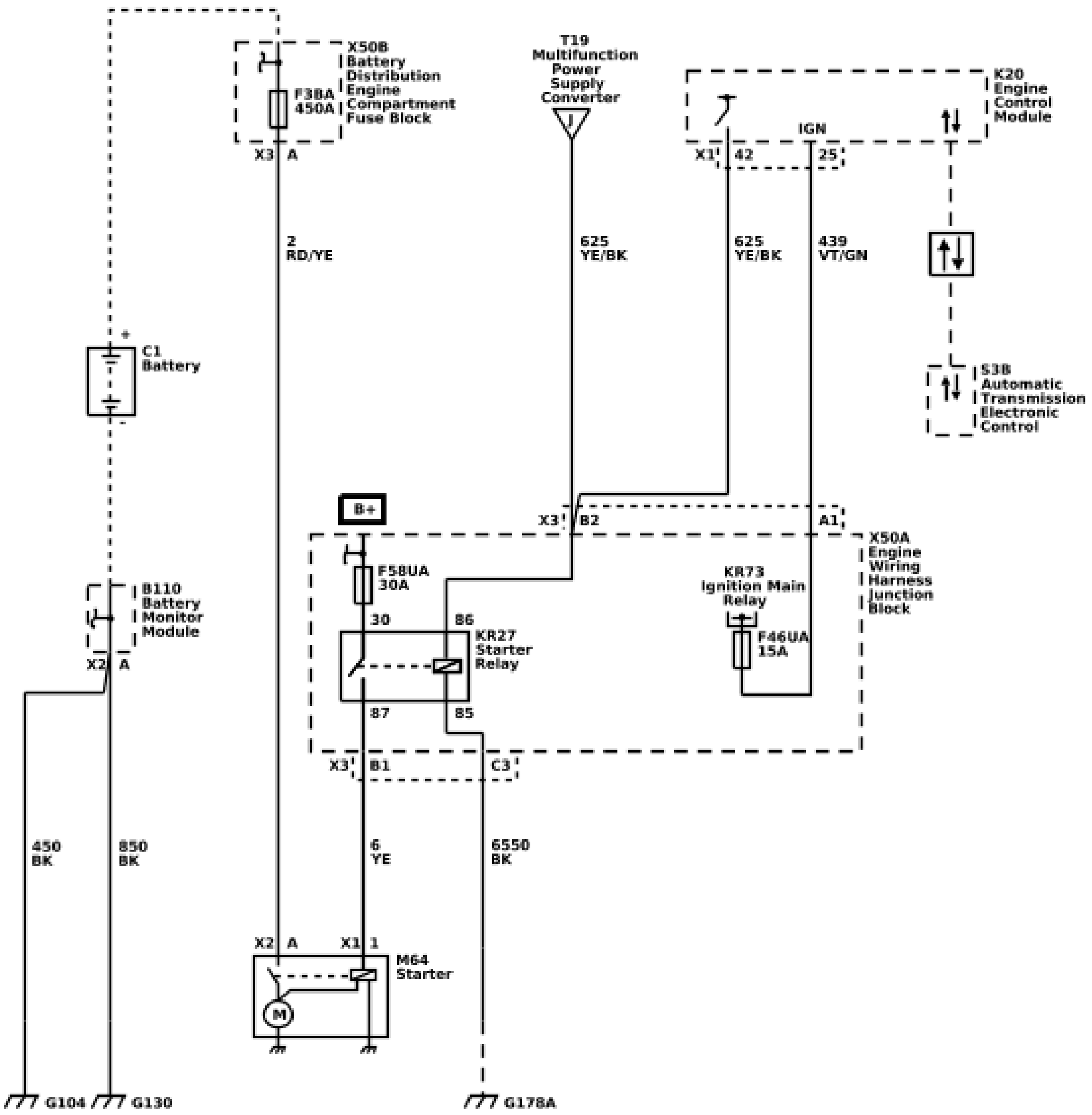
## Schematic and Routing Diagrams

## Starting and Charging Schematics (Starting (L84 / L87))


X50B Battery Distribution Engine Compartment Fuse Block
F3BA 400A
X3 A
T19 Multifunction Power Supply Converter
625 YE/BK
X1 36
625 YE/BK
X3 33
4325 YE/VT
IGN
X1 47
439 VT/GN
K20 Engine Control Module
C1 Battery
+
-
X3 B2
B+
X3 F2
A1
X50A Engine Wiring Harness Junction Block
F58UA 30A
F69UA 40A
86
30
KR27 Starter Relay
85
87
30
85
KR27C Engine Restart Relay
87
86
KR73 Ignition Main Relay
F46UA 15A
S38 Automatic Transmission Electronic Control
B110 Battery Monitor Module
X2 A
X3 B1
F1
C3
450 BK
850 BK
2 RD/YE
6 YE
4358 YE/GN
6550 BK
X2 A
X1 1
2
M64 Starter
M
G104
G130
G177A
LOC
DESC

6885522

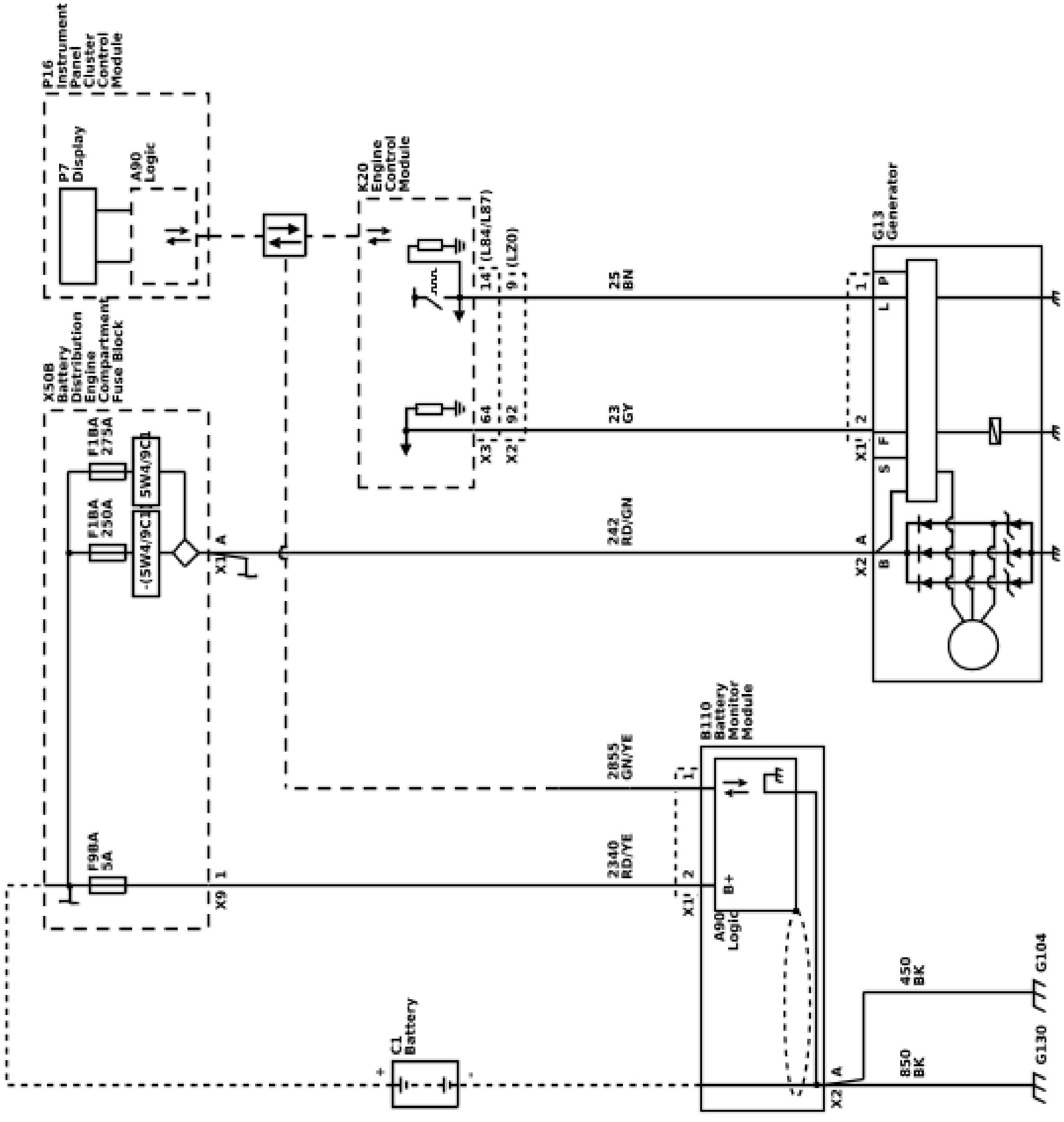
## Starting and Charging Schematics (Starting (LZ0))


X50B
Battery
Distribution
Engine
Compartment
Fuse Block
F38A
450A
X3
A
2
RD/YE
C1
Battery
+
-
B110
Battery
Monitor
Module
X2
A
450
BK
850
BK
G104
G130
T19
Multifunction
Power
Supply
Converter
625
YE/BK
K20
Engine
Control
Module
IGN
X1
42
25
625
YE/BK
439
VT/GN
S38
Automatic
Transmission
Electronic
Control
B+
F58UA
30A
30
86
KR27
Starter
Relay
87
85
X3
B2
A1
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition Main
Relay
F46UA
15A
X3
B1
C3
6
YE
6550
BK
X2
A
X1
1
M64
Starter
M
G178A

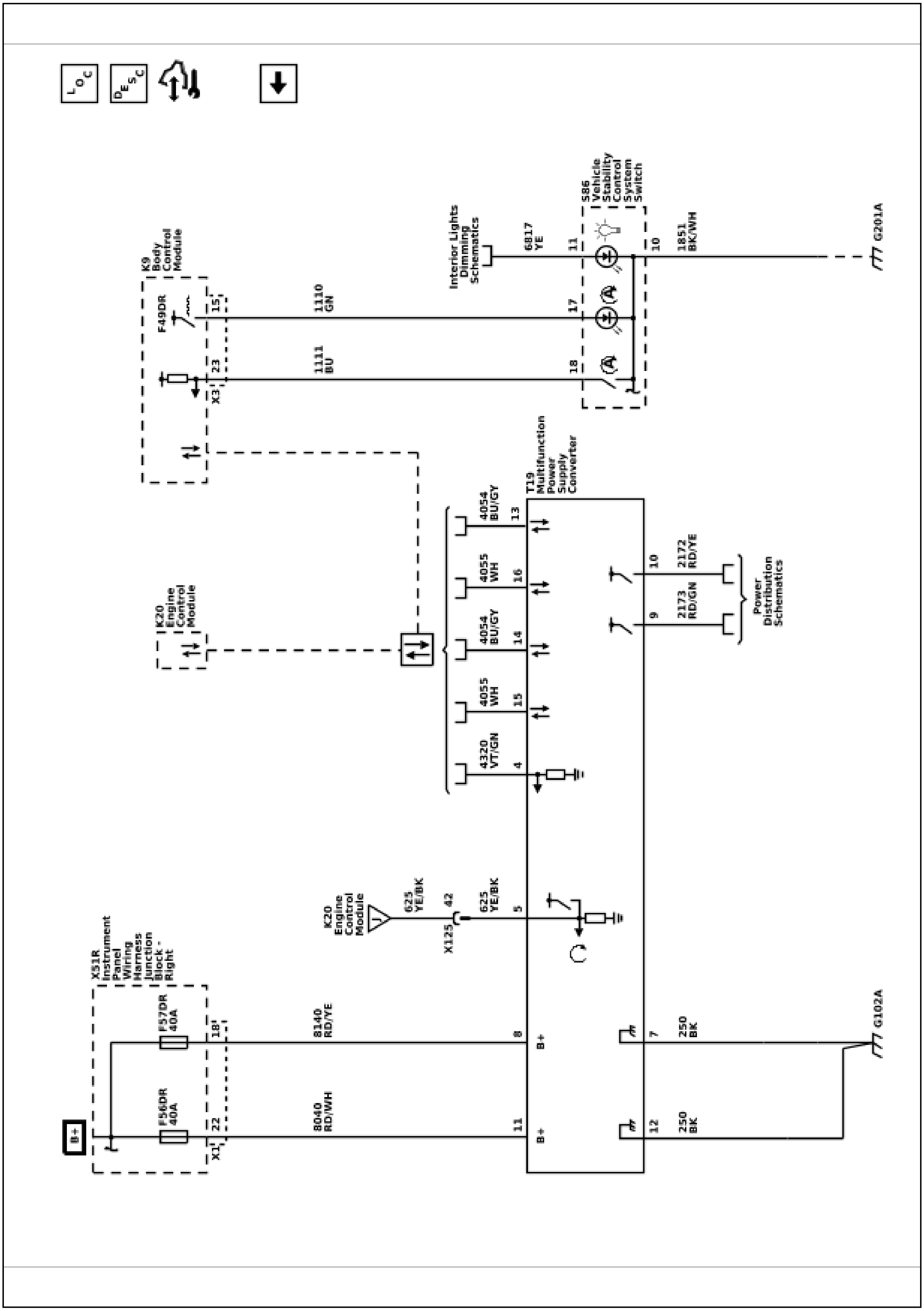
6885523

## Starting and Charging Schematics (Charging)

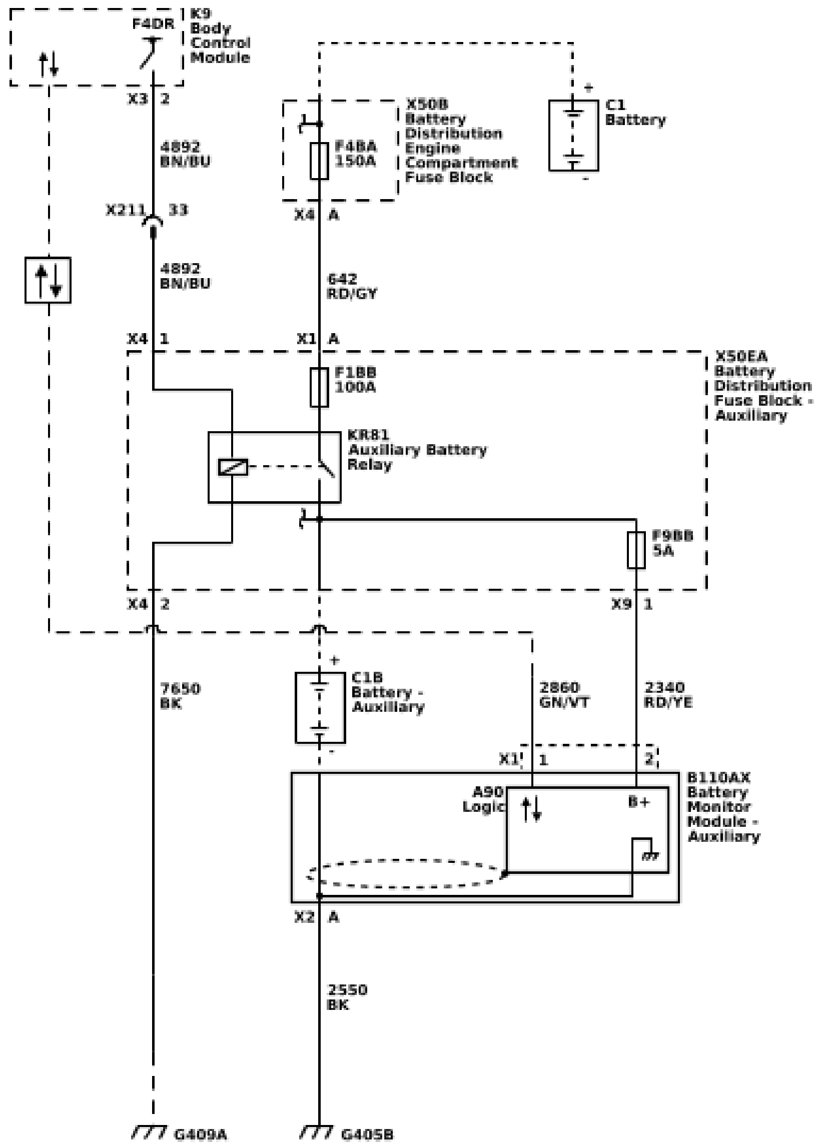
6885524


P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
K20 Engine Control Module
(L84/L87)
(LZ0)
14
9
64
92
X3
X2
X50B Battery Distribution Engine Compartment Fuse Block
F18A 275A
F18A 250A
5W4/9C
-(5W4/9C
X1 A
25 BN
23 GY
242 RD/GN
X1 1
X1 2
P
L
F
S
A
B
X2
G13 Generator
B110 Battery Monitor Module
2855 GN/YE
2340 RD/YE
F98A 5A
X9 1
X1 2
1
B+
A90 Logic
C1 Battery
+
-
X2 A
450 BK
850 BK
G104
G130

## Starting and Charging Schematics (Stop/Start System)


6885525
K9 Body Control Module
F49DR
15
23
X3
1110 GN
1111 BU
Interior Lights Dimming Schematics
6817 YE
S86 Vehicle Stability Control System Switch
11
17
18
10
1851 BK/WH
G201A
K20 Engine Control Module
T19 Multifunction Power Supply Converter
4054 BU/GY
13
4055 WH
16
4054 BU/GY
14
4055 WH
15
4320 VT/GN
4
10
2172 RD/YE
9
2173 RD/GN
Power Distribution Schematics
K20 Engine Control Module
625 YE/BK
42
X125
625 YE/BK
5
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F57DR 40A
18
F56DR 40A
22
X1
8140 RD/YE
8040 RD/WH
8
B+
11
B+
7
250 BK
12
250 BK
G102A

## Auxiliary Battery Schematics (Auxiliary Battery (5W4 / 9C1))


K9
Body
Control
Module
F4DR
X3 2
4892
BN/BU
X211 33
4892
BN/BU
X4 1
X50B
Battery
Distribution
Engine
Compartment
Fuse Block
F48A
150A
X4 A
C1
Battery
+
-
642
RD/GY
X1 A
X50EA
Battery
Distribution
Fuse Block -
Auxiliary
F18B
100A
KR81
Auxiliary Battery
Relay
F9BB
5A
X4 2
X9 1
7650
BK
C1B
Battery -
Auxiliary
+
-
2860
GN/VT
2340
RD/YE
X1 1
2
B110AX
Battery
Monitor
Module -
Auxiliary
A90
Logic
B+
X2 A
2550
BK
G409A
G405B

6885526

# Description and Operation

## Battery Description and Operation

***Warning: Batteries produce explosive gases, contain corrosive acid, and supply levels of electrical current high enough to cause burns. Therefore, to reduce the risk of personal injury when working near a battery:***

- ***Always shield your eyes and avoid leaning over the battery whenever possible.***
- ***Do not expose the battery to open flames or sparks.***
- ***Do not allow the battery electrolyte to contact the eyes or the skin. Flush immediately and thoroughly any contacted areas with water and get medical help.***
- ***Follow each step of the jump starting procedure in order.***
- ***Treat both the booster and the discharged batteries carefully when using the jumper cables.***

Batteries that are no longer wanted must be disposed of by an approved battery recycler and must never be thrown in the trash or sent to a landfill.

Batteries that are not part of the vehicle itself, not the battery under the hood, must only be transported on public streets for business purposes via approved hazardous material transportation procedures.

Battery storage, charging and testing facilities in repair shops must meet various requirements for ventilation, safety equipment, material segregation, etc.

The maintenance free battery is standard. There are no vent plugs in the cover. The battery is completely sealed except for 2 small vent holes in the side. These vent holes allow the small amount of gas that is produced in the battery to escape.

The battery has 3 functions as a major source of energy:

- Engine cranking
- Voltage stabilizer
- Alternate source of energy with generator overload

## Battery Low Start Vehicle Message

The body control module (BCM) monitors battery positive voltage to determine battery state of charge. If one or more of the BCM battery positive voltage terminals measure less than approximately 11.6V compared to the BCM ground circuits, this message will display and four chimes may sound. Start the vehicle immediately. If the vehicle is not started and the battery continues to discharge, the climate controls, heated seats, and audio systems will shut off and the vehicle may require a jump start. These systems will function again after the vehicle is started.

## Battery Ratings

A battery has 2 ratings:

- Cold cranking amperage
- Amperage hours

When a battery is replaced use a battery with similar ratings. See battery specification label on the original battery.

## Amperage Hours

The amperage hour rating tells you how much amperage is available when discharged evenly over a 20 hour period. The amperage hour rating is cumulative, so in order to know how much constant amperage the battery will output for 20 h, you have to divide the amperage hour rating by 20. Example: If a battery has an amperage hour rating of 74, dividing by 20 = 3.75. Such a battery can carry a 3.75 A load for 20 hours before dropping to 10.5 V. (10.5 V is the fully discharged level, at which point the battery needs to be recharged). A battery with an amperage hour rating of 55 will carry a 2.75 A load for 20 hours before dropping to 10.5 V.

## Cold Cranking Amperage

The cold cranking amperage is an indication of the ability of the battery to crank the engine at cold temperatures. The cold cranking amperage rating is the minimum amperage the battery must maintain for 30 seconds at −18°C (0°F) while maintaining at least 7.2 V. See battery label for the cold cranking amperage rating of this battery.

## Charging System Description and Operation

### Electrical Power Management Overview

The electrical power management system is designed to monitor and control the charging system and send diagnostic messages to alert the driver of possible problems with the battery and generator. This electrical power management system primarily utilizes existing on-board computer capability to maximize the effectiveness of the generator, to manage the load, improve battery state-of-charge and life, and minimize the system's impact on fuel economy. The electrical power management system performs 3 functions:

- Monitor the battery voltage and estimate the battery condition
- Take corrective actions by boosting idle speeds, and adjusting the regulated voltage
- Perform diagnostics and driver notification

The battery condition is estimated during ignition/vehicle off and during ignition/vehicle on. During ignition/vehicle off the state-of-charge of the battery is determined by measuring the open-circuit voltage. The state-of-charge is a function of the acid concentration and the internal resistance of the battery, and is estimated by reading the battery open circuit voltage when the battery has been at rest for several hours.

Any time the ignition/vehicle is on, the vehicle algorithm continuously estimates battery state-of-charge based on adjusted net amp hours, battery capacity, initial state-of-charge, and calculated temperature.

While the engine is running, the battery degree of discharge is primarily determined by the integrated battery current sensor, to obtain net amp hours.

In addition, the electrical power management function is designed to perform regulated voltage control to improve battery state-of-charge, battery life, and fuel economy. This is accomplished by using knowledge of the battery state-of-charge and temperature to set the charging voltage to an optimum battery voltage level for recharging without detriment to battery life.

### Charging System Components

**G13 Generator**

The engine drive belt drives the generator. When the rotor is spun, it induces an alternating current (AC) into the stator windings. The AC voltage is then sent through a series of diodes for rectification. The rectified voltage has been converted into a direct current (DC) for use by the vehicles electrical system to maintain electrical loads and the battery charge.
The voltage regulator integral to the generator controls the output of the generator; It is not serviceable.
The voltage regulator controls the amount of current provided to the rotor. If the generator has field control circuit fault, the generator defaults to an output voltage of 13.8 V.

The generator is serviced as a complete assembly. If there is a diagnosed fault in the generator, it must be replaced as an assembly.

**Generator Pulley**

The pulley drives the Generator via the engine drive belt. There are 2 types of pulleys:

1. Conventional solid Pulley which is bolted to the Generator stator shaft. This Pulley can be serviced separately.

2. One Way Clutch Pulley or Overrunning Alternator Decoupler Pulley allows the Generator to spin freely when the engine rapidly slows down on sudden deceleration. This part is not serviceable and the Generator needs to be replaced as an assembly.

**K9 Body Control Module (BCM)**

The K9 Body Control Module communicates with the K20 Engine Control Module and the instrument cluster for electrical power management operation. The BCM determines the output of the generator and sends the information to the ECM for control of the generator turn on signal circuit. It monitors the generator field duty cycle signal circuit information sent from the ECM for control of the generator. It monitors the battery current sensor, the battery positive voltage circuit, and estimates battery temperature to determine battery state of charge. The BCM also performs idle boost.

**B110 Battery Monitor Module**

The Battery Monitor Module communicates to the BCM via LIN. The BCM shares this information with the ECM. The purpose of the battery sensor module is to transmit battery information that the BCM/ECM can use to make decisions regarding stop/start, battery saver mode, and load shedding.

**K20 Engine Control Module (ECM)**

When the engine is running, the generator turn-on signal is sent to the generator from the ECM, turning on the regulator. The generator's voltage regulator controls current to the rotor, thereby controlling the output voltage. The rotor current is proportional to the electrical pulse width supplied by the regulator. When the engine is started, the regulator senses generator rotation by detecting AC voltage at the stator through an internal wire. Once the engine is running, the regulator varies the field current by controlling the pulse width. This regulates the generator output voltage for proper battery charging and electrical system operation. The generator field duty terminal is connected internally to the voltage regulator and externally to the ECM. When the voltage regulator detects a charging system problem, it grounds this circuit to signal the ECM that a problem exists. The ECM monitors the generator field duty cycle signal circuit, and receives control decisions based on information from the BCM.

**P16 Instrument Cluster**
As a means of displaying the charging system functions, some vehicles may be equipped with a voltmeter gauge on the instrument cluster and/or a system voltage display in the driver information center. These will indicate the current vehicle system voltage.

The instrument cluster also provides customer notification if there is a concern with the charging system. There are two means of notification: a charge indicator on the instrument cluster and/or a service system message displayed on the Driver Information Center (DIC) if equipped.

## Charging System Operation

The purpose of the charging system is to maintain the battery charge and vehicle loads. There are 6 modes of operation and they include:

- Battery Sulfation Mode
- Charge Mode
- Fuel Economy Mode
- Head lamp Mode
- Start Up Mode
- Voltage Reduction Mode

The ECM Controls the Generator through the generator turn–on signal circuit, also known as the Generator L-terminal. The ECM monitors the generator performance though the Generator field duty cycle signal circuit, also known as the generator F-terminal.

The Generator turn–on signal (Generator L-terminal) is a Pulse Width Modulation (PWM) signal of 128 Hz with a duty cycle of 0–100%. Normal duty cycle is between 5–95%. 0–5% and 95–100% are for diagnostic purposes, with 0–5% monitoring for an open circuit and 95–100% monitoring for a short to ground at a fixed 13.8 V. The following table shows the commanded duty cycle and output voltage of the Generator:

| Commanded Duty Cycle | Generator Output Voltage (+/- .25 V) |
|---|---|
| 0–5% | 13.8 V |
| 10% | 11 V |
| 20% | 11.56 V |
| 30% | 12.13 V |
| 40% | 12.69 V |
| 50% | 13.25 V |
| 60% | 13.81 V |
| 70% | 14.38 V |
| 80% | 14.94 V |
| 90% | 15.5 V |
| 95–100% | 13.8 V |

The Generator provides a PWM feedback signal of the Generator voltage output through the Generator field duty cycle signal circuit to the ECM. This information is sent to the Body Control Module (BCM). The Generator field duty cycle signal (Generator F-terminal) is a PWM signal of 60–460 Hz with a duty cycle of 0–100%. Normal duty cycle is between 5–100%. 0–5% is reserved for diagnostic purposes.

As the charging systems works to maintain the battery charge and manage vehicle electrical loads, it is normal for the voltmeter gauge on the instrument cluster or the system voltage displayed in the DIC to fluctuate or change. This does not indicate a malfunction. Depending on the battery state of charge and the vehicle electrical load, these values may be anywhere from 12.5 V to 15.5 V.

## Charging System Modes

**Battery Sulfation Mode**
The BCM will enter this mode when the interpreted Generator output voltage is less than 13.2 V for 45 minutes. When this condition exists the BCM will enter Charge Mode for 2–3 minutes. The BCM will then determine which mode to enter depending on voltage requirements.

**Charge Mode**
The BCM will enter Charge Mode when ever one of the following conditions are met:

- Windshield wipers are ON for more than 3 s.
- Climate Control Voltage Boost Mode Request is true, as sensed by the HVAC control module via serial data. High speed cooling fan, rear defogger, and HVAC high speed blower operation can cause the BCM to enter the Charge Mode.
- The estimated battery temperature is less than 0°C (32°F).
- Battery State of Charge is less than 80%.
- Vehicle speed is greater than 145 km/h (90 mph)
- A current sensor malfunction exists.
- System voltage is determined to be below 12.56 V

When any one of these conditions is met, the system will set targeted generator output voltage to a charging voltage between 13.9–15.5 V, depending on the battery state of charge and estimated battery temperature.

### Fuel Economy Mode

The BCM will enter Fuel Economy Mode when the estimated battery temperature is at least 0°C (32°F) but less than or equal to 80°C (176°F), the calculated battery current is less than 15 A and greater than −8 A, and the battery state-of-charge is greater than or equal to 80%. Its targeted generator output voltage is the open circuit voltage of the battery and can be between 12.5–13.1 V. When fuel economy mode is active, the generator is not charging, only maintaining open circuit battery voltage. The BCM will exit this mode and enter Charge Mode when any of the conditions described above are present.

### Headlamp Mode

The BCM will enter Headlamp Mode when ever the head lamps are ON (high or low beams). Voltage will be regulated between 13.9–14.5 V.

### Start Up Mode

When the engine is started the BCM sets a targeted generator output voltage of 14.5 V for 30 s.

### Tow/Haul Mode (if applicable)

Pressing the Tow/Haul Mode button located on the center stack, the vehicle system voltage is raised and the remote (non-vehicle) battery will be charged. Having the headlamps on will raise the system voltage and if the Tow/Haul button is applied it will not serve any purpose. The voltage is regulated between 13.9-14.5 V.

## Instrument Cluster Operation

### Charge Indicator Operation

The instrument cluster illuminates the charge indicator and displays a warning message in the driver information center if equipped, when the one or more of the following occurs:

- The ECM detects that the generator output is less than 11 V or greater than 16 V. The instrument cluster receives a serial data message from the ECM requesting illumination.
- The instrument cluster determines that the system voltage is less than 11 V or greater than 16 V for more than 30 s. The instrument cluster receives a serial data message from the BCM indicating there is a system voltage range concern.
- The instrument cluster performs the displays test at the start of each ignition cycle. The indicator illuminates for approximately 3 s.

### Driver Information Center Message: BATTERY NOT CHARGING SERVICE CHARGING SYSTEM or SERVICE BATTERY CHARGING SYSTEM

The BCM and the ECM will send a serial data message to the driver information center for the BATTERY NOT CHARGING SERVICE CHARGING SYSTEM or SERVICE BATTERY CHARGING SYSTEM message to be displayed. It is displayed when a charging system DTC is a current DTC. The message is turned off when the conditions for clearing the DTC have been met.

### Voltmeter Gauge and/or System Voltage Display (if equipped)

As a means of displaying the charging system functions, some vehicles may be equipped with a voltmeter gauge on the instrument cluster and/or a system voltage display in the driver information center. These will indicate the current vehicle system voltage.

As the charging systems works to maintain the battery charge and manage vehicle electrical loads, it is normal for the voltmeter gauge on the instrument cluster or the system voltage display in the driver information center to fluctuate or change. This does not indicate a malfunction. Depending on the battery state of charge and the vehicle electrical load, these values may be anywhere from 12.5 V to 15.5 V.

## Electrical Power Management Description and Operation

## Electrical Power Management

The electrical power management is used to monitor and control the charging system and alert the driver of possible problems within the charging system. The electrical power management system makes the most efficient use of the generator output, improves the battery state-of-charge, extends battery life, and manages system electrical loads.

The load shed operation is a means of reducing electrical loads during a low voltage or low battery state-of-charge condition.

The idle boost operation is a means of improving generator performance during a low voltage or low battery state-of-charge condition.

Each electrical power management function, either idle boost or load shed, is activated in incremental steps. For example, idle boost 1 must be active before idle boost 2 can be active. The criteria used by the body control module (BCM) to regulate electrical power management are outlined below:

### Idle Boost and Load Shed With Current Sensor

| Function | Battery Temperature Calculation | Battery Voltage Calculation | Amp-Hour Calculation | Action Taken |
|---|---|---|---|---|
| Idle Boost 1 Start | Less Than −15°C (5°F) | Less Than 13 V | — | First level Idle boost requested |
| Idle Boost 1 Start | — | — | Battery has a net loss greater than 0.6 Ah | First level Idle boost requested |
| Idle Boost 1 Start | — | Less Than 11 V | — | First level Idle boost requested |
| Idle Boost 1 End | Greater Than −10°C (14°F) | Greater Than 12 V | Battery has a net loss less than 0.2 Ah | First level Idle boost request cancelled |
| Idle Boost 2 Start | — | — | Battery has a net loss greater than 1.6 Ah | Second level Idle boost requested |
| Idle Boost 2 Start | — | Less Than 11 V | — | Second level Idle boost requested |
| Idle Boost 2 End | — | Greater Than 12 V | Battery has a net loss less than 0.8 Ah | Second level Idle boost request cancelled |
| Load Shed 1 Start | — | — | Battery has a net loss of 4 Ah | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle |
| Load Shed 1 Start | — | Less Than 11 V | — | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle |
| Load Shed 1 End | — | Greater Than 12 V | Battery has a net loss of less than 2 Ah | Clear Load Shed 1 |
| Idle Boost 3 Start | — | — | Battery has a net loss of 10 Ah | Third level Idle boost requested |
| Idle Boost 3 Start | — | Less Than 11 V | — | Third level Idle boost requested |
| Idle Boost 3 End | — | Greater Than 12 V | Battery has a net loss of less than 6.0 Ah | Third level Idle boost request cancelled |
| Load Shed 2 Start | — | — | Battery has a net loss greater than 12 Ah | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC |
| Load Shed 2 Start | — | Less Than 11 V | — | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC |
| Load Shed 2 End | — | Greater Than 12 V | Battery has a net loss of less than 8 Ah | Clear Load Shed 2 |
| Load Shed 3 Start | — | Less Than 11.9 V | Battery has a net loss greater than 20 Ah | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC |

| Function | Battery Temperature Calculation | Battery Voltage Calculation | Amp-Hour Calculation | Action Taken |
|---|---|---|---|---|
| Load Shed 3 Start | — | Less Than 11 V | — | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC |
| Load Shed 3 End | — | Greater Than 12.6 V | Battery has a net loss of less than 13 Ah | Clear Load Shed 3 |

### Idle Boost and Load Shed Without Current Sensor (based on battery voltage)

| Function | Battery Temperature Calculation | Battery Voltage Calculation | Action Taken |
|---|---|---|---|
| Idle Boost 1 Start | Less Than −15°C (5°F) | Less Than 13 V | First level Idle boost requested |
| Idle Boost 1 Start | — | Less Than 12.6 V | First level Idle boost requested |
| Idle Boost 1 End | Greater Than −15°C (5°F) | — | First level Idle boost request cancelled |
| Idle Boost 1 End | — | Greater Than 13 V | First level Idle boost request cancelled |
| Idle Boost 2 Start | — | Less Than 12.4 V | Second level Idle boost requested |
| Idle Boost 2 End | — | Greater Than 12.5 V | Second level Idle boost request cancelled |
| Load Shed 1 Start | — | Less Than 12.3 V | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 20% of their cycle |
| Load Shed 1 End | — | Greater Than 12.4 V | Clear Load Shed 1 |
| Idle Boost 3 Start | — | Less Than 10 V | Third level Idle boost requested |
| Idle Boost 3 End | — | Greater Than 12.3 V | Third level Idle boost request cancelled |
| Load Shed 2 Start | — | Less Than 12.1 V | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 50% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC |
| Load Shed 2 End | — | Greater Than 12.2 V | Clear Load Shed 2 |
| Load Shed 3 Start | — | Less Than 11.9 V | Rear Defrost, Heated Mirrors, Heated Seats, HVAC cycled OFF for 100% of their cycle. The BATTERY SAVER ACTIVE message will be displayed on the DIC |
| Load Shed 3 End | — | Greater Than 12.0 V | Clear Load Shed 3 |

## Starting System Description and Operation

### Starter Motor Operation (Without KL9)

The starter motors are non-repairable. They have pole pieces that are arranged around the armature. Both solenoid windings are energized. The pull-in winding circuit is completed to the ground through the starter motor. The windings work together magnetically to pull and hold in the plunger. The plunger moves the shift lever. This action causes the starter drive assembly to rotate on the armature shaft spline as it engages with the flywheel ring gear on the engine. Moving at the same time, the plunger also closes the solenoid switch contacts in the starter solenoid. Full battery voltage is applied directly to the starter motor and it cranks the engine.

As soon as the solenoid switch contacts close, current stops flowing thorough the pull-in winding because battery voltage is applied to both ends of the windings. The hold-in winding remains energized. Its magnetic field is strong enough to hold the plunger, shift lever, starter drive assembly, and solenoid switch contacts in place to continue cranking the engine. When the engine starts, pinion overrun protects the armature from excessive speed until the switch is opened.

When the crank signal is removed, the starter relay opens and battery voltage is removed from the starter solenoid S terminal. Current flows from the motor contacts through both windings to the ground at the end of the hold-in winding. However, the direction of the current flow through the pull-in winding is now opposite the direction of the current flow when the winding was first energized.

The magnetic fields of the pull-in and hold-in windings now oppose one another. This action of the windings, along with the help of the return spring, causes the starter drive assembly to disengage and the solenoid switch contacts to open simultaneously. As soon as the contacts open, the starter circuit is turned off.

### Enhanced Starter Motor Operation (KL9)

The Engine Stop/Start system in GM vehicles automatically turns off the engine when the vehicle comes to a stop under certain driving conditions, and can quickly restart the engine in about 0.3 seconds when commanded to do so.

In order to smoothly restart the engine as quickly as possible while managing the greater number of engine starts, the Stop/Start system uses an enhanced starter motor that operates differently from a conventional starter motor. It has a high performance electric motor and a stronger pinion engagement mechanism than a conventional starter. It also has independent control of the pinion and motor.

The enhanced starter motor continues using the typical pinion engagement mechanism with a starter solenoid that drives the pinion gear to engage or disengage the flywheel of the engine. When engaged, the starter motor can rotate the engine flywheel and, in turn, the crankshaft.

On the enhanced starter of a Stop/Start system the operation is done in two separate functions inside the solenoid, Starter Motor and Pinion Actuator. Each function controlled individually by the ECM. There are two separate relays to control the two separate parts of the enhanced solenoid:

- KR27 Starter Motor Relay
- KR27C Starter Pinion Actuator Relay

The two individually-controlled relays allow for smooth engagement of the pinion gear into the flywheel with minimum noise and wear.

When the vehicle is coming to a stop, just before the engine stops rotating (at approximately 50 RPM) during stop/start operation, the ECM energizes the Starter Pinion Solenoid Actuator Relay to easily push the pinion gear into the flywheel gear without gear clash. (Fig. 8) When the engine stops rotating during Stop/Start operation (Auto Stop mode), the starter pinion gear is fully engaged, ready for the starter motor to become energized to quickly start the engine again.

A secondary need for the starter pinion to be driven into the flywheel gear before the engine stops rotating is to address quickly changing demands on the engine. For example, when a driver is slowing nearly to a stop — and the Stop/Start system is preparing for Auto Stop mode — but suddenly decides to release the brake and accelerate

In this situation, the engine has already stopped rotating, or nearly so. A conventional starter cannot restart the engine until the engine has completely stopped. However, with the enhanced starter, the starter pinion gear is fully engaged and ready to begin rotating the engine even before it fully stops turning. Otherwise, the engine would actually have to stop rotating before the pinion can engage smoothly to begin a restart.

To prevent a lag in engine operation, the ECM uses predictive speed matching of the flywheel gear speed and the pinion gear speed to engage the pinion gear into the flywheel gear without gear clash before the engine fully stops. By predicting how long it takes the starter motor to spin up using an algorithm, the pinion gear speed can be matched to the flywheel gear speed. The result is an almost instant restart that is possible at extremely low engine speeds.

## Ignition Switch

### Keyless Start

When the Ignition mode switch is placed in the crank position, a discrete signal is supplied to the body control module (BCM) notifying it that the ignition is in the crank position. The BCM then sends a serial data message to the engine control module (ECM) that crank has been requested. The ECM then verifies that the brake pedal is applied and for manual transmission the clutch is fully depressed or for automatic transmission is in Park/Neutral. If it is, the ECM then supplies 12 V to the control circuit of the starter relay. When this occurs, battery positive voltage is supplied through the switch side of the crank relay to the S terminal of the starter solenoid.

### Key Start

When the ignition switch is placed in the Start position, a discrete signal is supplied to the body control module (BCM) notifying it that the ignition is in the Start position. The BCM then sends a message to the engine control module (ECM) notifying it that CRANK has been requested. The ECM verifies that the transmission is in Park or Neutral. If it is, the ECM then supplies 12 V to the control circuit of the crank relay. When this occurs, battery positive voltage is supplied through the switch side of the crank relay to the S terminal of the starter solenoid.

## Stop/Start System Description and Operation

The Stop/Start System is used to improve fuel efficiency in stop/start driving. The vehicle automatically shuts down the engine in appropriate conditions at a traffic light, for example, resulting in zero tail pipe emissions and saving fuel which otherwise is used idling the engine when stationary. The engine instantly restarts when the driver is ready to move away.

As soon as the driver prepares to move away (by releasing the brake pedal and/or depressing the accelerator pedal), the engine will start; it only takes the system around 0.3 s to start the engine.

To support the increased number of engine starts, the starter motor is upgraded with a high performance electric motor and a stronger pinion engagement mechanism with reduced noise levels.

Along with the upgraded starter motor, advanced battery technology is required to ensure the vehicles battery can handle the frequent charge and discharge cycles common with stop/start operation. There is battery sensor module connected to the battery which continually monitors the battery charge and healthy state. The Engine Control Module (ECM) uses this information from the battery sensor module to determine if the battery charge and health is sufficient for an Stop/Start condition.

The Stop/Start system can reduce fuel consumption and carbon dioxide (CO2) emissions by up to 5% in mixed driving conditions. In an urban environment and in heavy traffic with frequent stops the savings may increase to as much as 10%.

There are also sophisticated controls in place to help ensure the Stop/Start System does not compromise the needs of either the driver or vehicle. For the engine to shutdown, the vehicle must be below 5 km/h (3 MPH), the selector lever in position D, and brake pedal depressed. To restart, the driver simply releases the brake pedal and the enhanced starter motor engages the engine. When the engine has been shut down by the Stop/Start System, a control indicator will be illuminated in the Driver Information Center (DIC). When the engine is restarted, the control indicator in the DIC extinguishes.

To ensure neither the needs of the driver or vehicle are compromised the engine will not shut down in the following circumstances:

- Ambient and coolant temperature correlation does not match specified values.
- Ambient temperature is less than −10°C (14°F)
- Battery temperature is less than 0°C (32°F) or greater than 55°C (131°F)
- Driver seat belt is not fastened and the drivers door is not fully closed (not applicable to vehicles in North America)
- HVAC system demand is high
- HVAC defrost has been selected
- Battery charge is low

Likewise the engine will automatically restart if:

- Driver door opened and driver seat belt unbuckled (not applicable to vehicles in North America)
- Engine hood opened
- Battery charge is low
- HVAC demand increases
- Vehicle speed increases
- Brake booster vacuum has been reduced
- Engine coolant temperature is greater than 125°C (257°F)
- Economy mode turned OFF by driver
- Autostop time exceeded 2 min

When the Stop/Start System has shut down the engine, and the ambient temperature is below 15°C (59°F), the ECM will activate the Stop/Start auxiliary relay which controls the electric engine coolant pump motor to continually circulate the engine coolant through the engine while the engine is off. This is to ensure the engine and passenger compartment temperature is maintained while off. Once the Stop/Start System has restarted the engine, the ECM will turn off the electric coolant pump motor, thus allowing the engines internal coolant pump to circulate the engine coolant. The Stop/Start System is automatically activated each time the ignition switch is turned on.

Through the climate control system, the vehicle can be cycled between off, comfort, and eco air conditioning modes (if equipped). In comfort mode, the priority for Stop/Start operation is on customer comfort. Depending on ambient temp, humidity, cabin temperature and cabin temperature setpoint, the least amount of autostops occur in this mode. In eco mode, the priority is on fuel economy. There are more frequent autostops with some sacrificing of cabin temperature control. With the HVAC turned off, the maximum autostops occur since there will be no A/C compressor requests.

### Autostop Criteria

The ECM will send an Autostop state message to the body control module (BCM) and shut down the engine when all of the following criteria is met. The BCM will transmit the Autostop state message to the instrument cluster which will display the Autostop indicator in the tachometer display.

- Initial minimum vehicle speed during drive cycle must be 19 km/h (12 MPH) or greater. Subsequent autostop minimum speed may vary from 2-10 km/h (1-6 MPH), depending on vehicle
- Ambient and engine coolant temperature correlation meets specified values.
- Ambient and transmission fluid temperature correlation meets specified values.
- Hood switch status is closed
- Driver door status is closed
- Driver seat belt status is buckled
- Brake booster vacuum is greater than 45 kPa (7 PSI)
- Transmission gear selector is in the Drive position
- Vehicle speed is less than 5 km/h (3 MPH)
- Engine speed is below 1,500 RPM
- Engine coolant temperature is less than 120°C (248°F)
- Ambient temperature is greater than −10°C (14°F)
- No A/C compressor request from HVAC (A/C or Defrost modes)
- Battery voltage greater than 12 V
- Battery state of charge greater than 75% (changes with state of health)

**Autostop Enable Ambient and Engine Coolant Temperature Table**

| Ambient Temperature | inimum Coolant Temperature | Autostop Enable |
|---|---|---|
| −10°C (14°F) | 60°C (140°F) | Yes |
| 0°C (32°F) | 50°C (122°F) | Yes |
| 6°C (43°F) | 40°C (104°F) | Yes |
| 12°C (54°F) | 30°C (86°F) | Yes |
| 20°C (68°F) | 18°C (64°F) | Yes |
| 30°C (86°F) | 18°C (64°F) | Yes |

### Autostart Criteria

The ECM will send an Autostart state message to the BCM. If all of the following conditions are true the ECM and BCM will restart the vehicle.

Driver Enabled Conditions that will engage Autostart:

- Driver removes pressure from the brake or depresses the accelerator pedal while the vehicle is in the forward Drive gear

System Enabled Conditions that will engage Autostart

**Note:** If one or more of the following conditions occur, the system will force the engine to restart.

- Brake booster vacuum is less than 40 kPa (6 PSI)
- A/C compressor request from HVAC (A/C or Defrost modes)
- Battery voltage less than 11 V,
- Battery state of charge is less than 73% (changes with state of health)

- Driver door status changes to open and driver seat belt status changes to unbuckled (not applicable to vehicles in North America)
- Hood switch status changes to open
- Autostop time exceeded 2 min

If the crank time exceeds 2 s, a manual ignition switch restart will be necessary.

## System Components

### Engine Control Module (ECM)

The ECM monitors the inputs from the Engine Coolant Temperature (ECT) sensor, Vehicle Speed Sensor (VSS), Battery Sensor Module, hood ajar switch, brake booster vacuum sensor, and engine speed to determine Autostart and Autostop conditions. The ECM also controls the auxiliary coolant pump motor (if equipped).

### Transmission Control Module (TCM)

The TCM monitors the inputs from the transmission neutral safety switch to determine the driver selected gear. This information is transmitted to the ECM via serial data to support the Auto Stop Start algorithm.

### Engine Coolant Temperature sensor (ECT)

The ECT sensor is used to determine engine operating temperature.

### Intake Air Temperature Sensor (IAT)

The ECM uses this sensor to monitor ambient air temperature. If too cold, the Autostop will not occur.

### Inside air temperature sensor

The HVAC control module monitors the passenger compartment temperature sensor to determine the temperature inside the passenger compartment. The HVAC control module sends this temperature reading to the ECM on the data communication circuit. The ECM uses this temperature values to determine if a restart is requires based on the temperature inside the passenger compartment.

### Vehicle speed sensor

The vehicle speed sensor is used to determine vehicle speed. If vehicle speed is detected above a calculated value during an Autostop condition, the ECM will start the engine.

### Hood Ajar Switch

If the hood switch is in the open position, the vehicle will not Autostop. If the hood is opened during Autostop, the vehicle will automatically restart.

### Brake Booster Vacuum Sensor

The ECM monitors vacuum in order to ensure proper power assist for the brake pedal. If the ECM determines vacuum is too low, it will restart the engine.

### Brake Pedal Position Sensor (BPPS) & Accelerator Pedal Position Sensor (APP)

The ECM monitors both the brake pedal position sensor and the accelerator pedal position sensor to determine the level of activation for each. While the accelerator pedal is in it’s at rest position with no pressure applied by the operator, a partially depressed Brake pedal will cause the ECM to prepare the engine for an Autostop event. When the vehicle is in an auto stop event and the status of the brake pedal position sensor changes from meeting the autostop criteria to not meeting this criteria the engine will be restarted provided all of the other conditions to allow an autostart are met. If the Accelerator pedal is moved from its at rest position the vehicle will also enter an auto start event if all other conditions to support an autostart event, except for the brake pedal position, are met.

### Transmission Gear Shift Position Switch

The transmission gear shift position switch is used to determine if the transmission is in the proper state to allow an auto stop/start event. The ECM will not allow Autostop until the brake is engaged, the transmission is in the forward gear position and then the vehicle slows to below the minimum speed required to allow and autostop while meeting all of the other minimum criteria to support an autostop event.

### Coolant Pump Motor

The ECM will turn on the auxiliary coolant pump motor during Autostop to maintain engine operating temperature and HVAC temperature. Once the engine is running, the ECM will turn off the coolant pump motor.

### Body Control Module (BCM)

The Body Control Module (BCM) monitors the Autostop Disable switch in order to enable or disable the system. It sends the appropriate messages to the ECM Via serial data to enable or disable the system.

### Battery Sensor Module

The Battery Sensor Module monitors the battery current load, state of health, and state of charge, the information is sent to the BCM Via LIN then to the ECM Via Serial Data. If the module detects high current load, the battery is in a poor state of health or a low charge condition, the ECM will not allow Autostop to occur.

### Autostop Disable Switch

The disable switch is an input to the BCM, it allows the customer to disable or re-enable the Autostop system. After the vehicle is turned off the Autostop system will turn back on the next time the vehicle is started.

### Power Supply Transformer

The DC to DC converter monitors battery voltage and will maintain operating voltage to the radio, instrument cluster and instrument panel displays. The DC to DC converter will provide a boosted voltage to sensitive loads during Autostart to ensure proper operation of the driver informational displays.

**Instrument Cluster**
In order to differentiate between a normal engine shut down (engine speed 0 RPM) and when the engine has been shut down by the Stop/Start System, the tachometer needle will rest at the Autostop indicator icon (500 RPM point) indicating the engine has been shut down by the Stop/Start System. Once the engine is restarted, or the ECO button has disengaged Autostop, the tachometer will function normally.

# Section 8

# HVAC

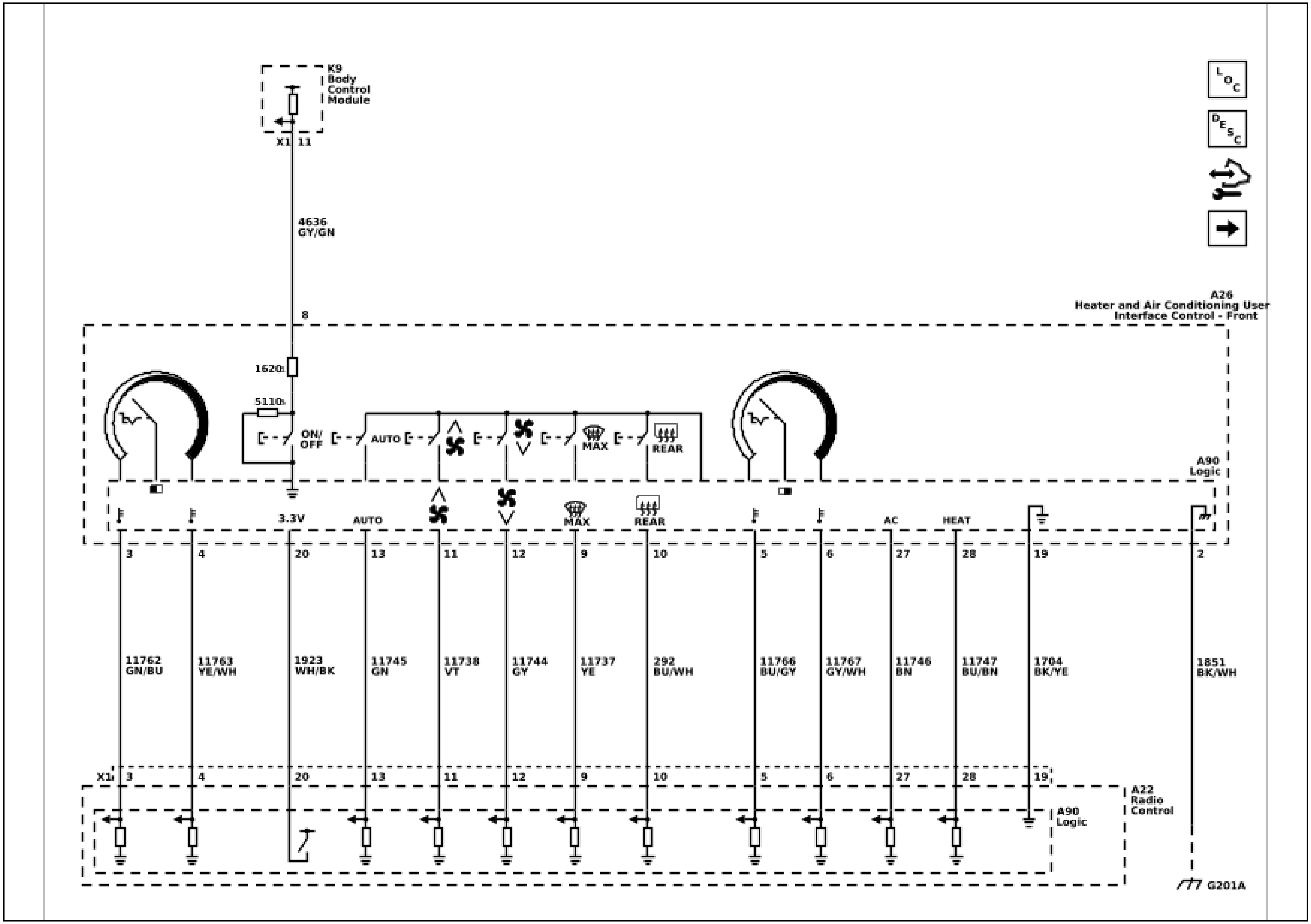
**HVAC - Automatic** ................................ **8-2**
  **Schematic and Routing Diagrams** .........**8-2**
    HVAC Schematics ...................................8-3
  **Description and Operation** ...................**8-13**
    Automatic HVAC Description and Operation .............................................. 8-13

# HVAC

## HVAC - Automatic

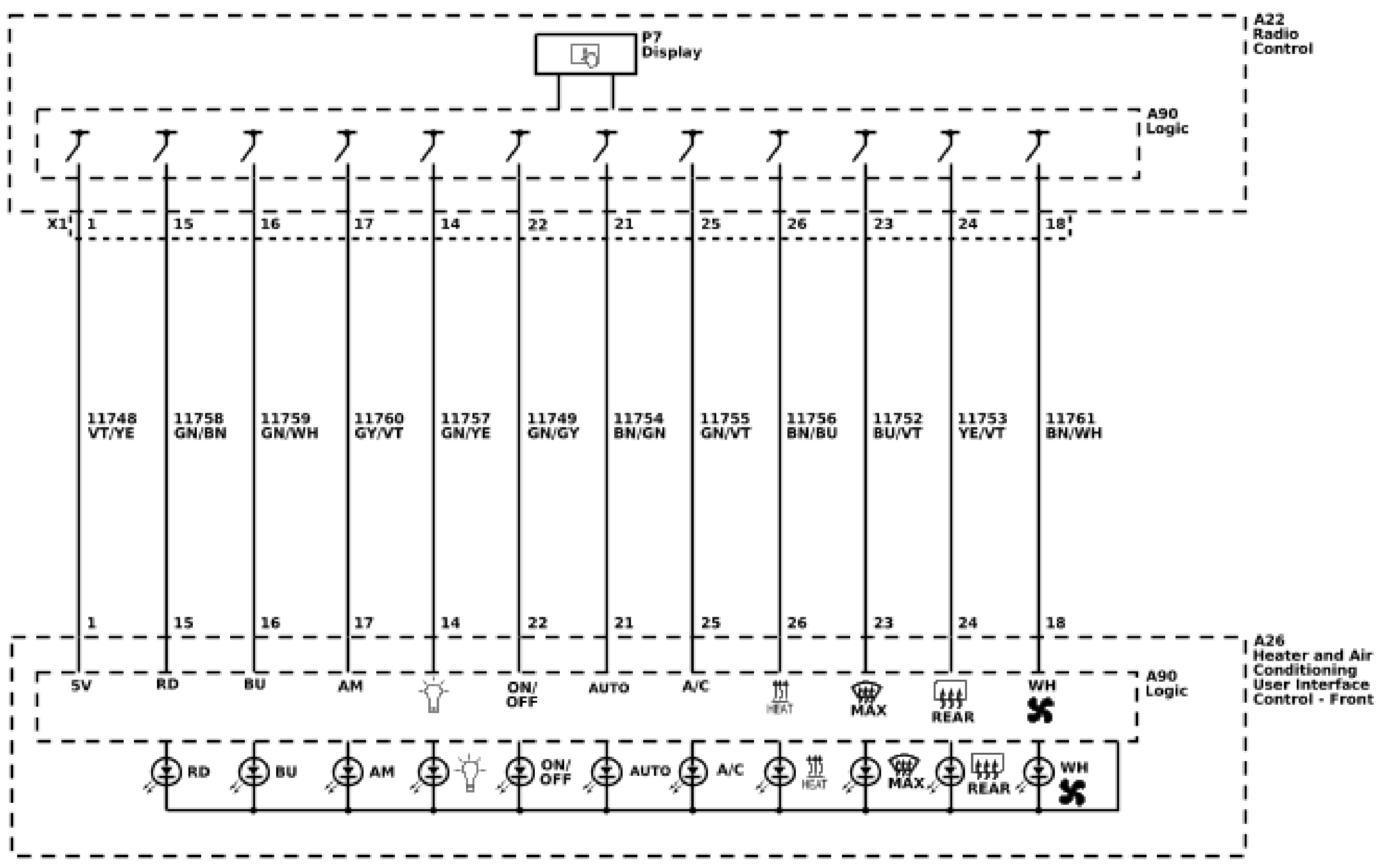
### Schematic and Routing Diagrams

## HVAC Schematics (HVAC Controls)


K9
Body
Control
Module
X1 11
4636
GY/GN
8
A26
Heater and Air Conditioning User
Interface Control - Front
1620Ω
5110Ω
ON/
OFF
AUTO
MAX
REAR
A90
Logic
3.3V
AUTO
MAX
REAR
AC
HEAT
3
4
20
13
11
12
9
10
5
6
27
28
19
2
11762
GN/BU
11763
YE/WH
1923
WH/BK
11745
GN
11738
VT
11744
GY
11737
YE
292
BU/WH
11766
BU/GY
11767
GY/WH
11746
BN
11747
BU/BN
1704
BK/YE
1851
BK/WH
X1 3
4
20
13
11
12
9
10
5
6
27
28
19
A90
Logic
A22
Radio
Control
G201A

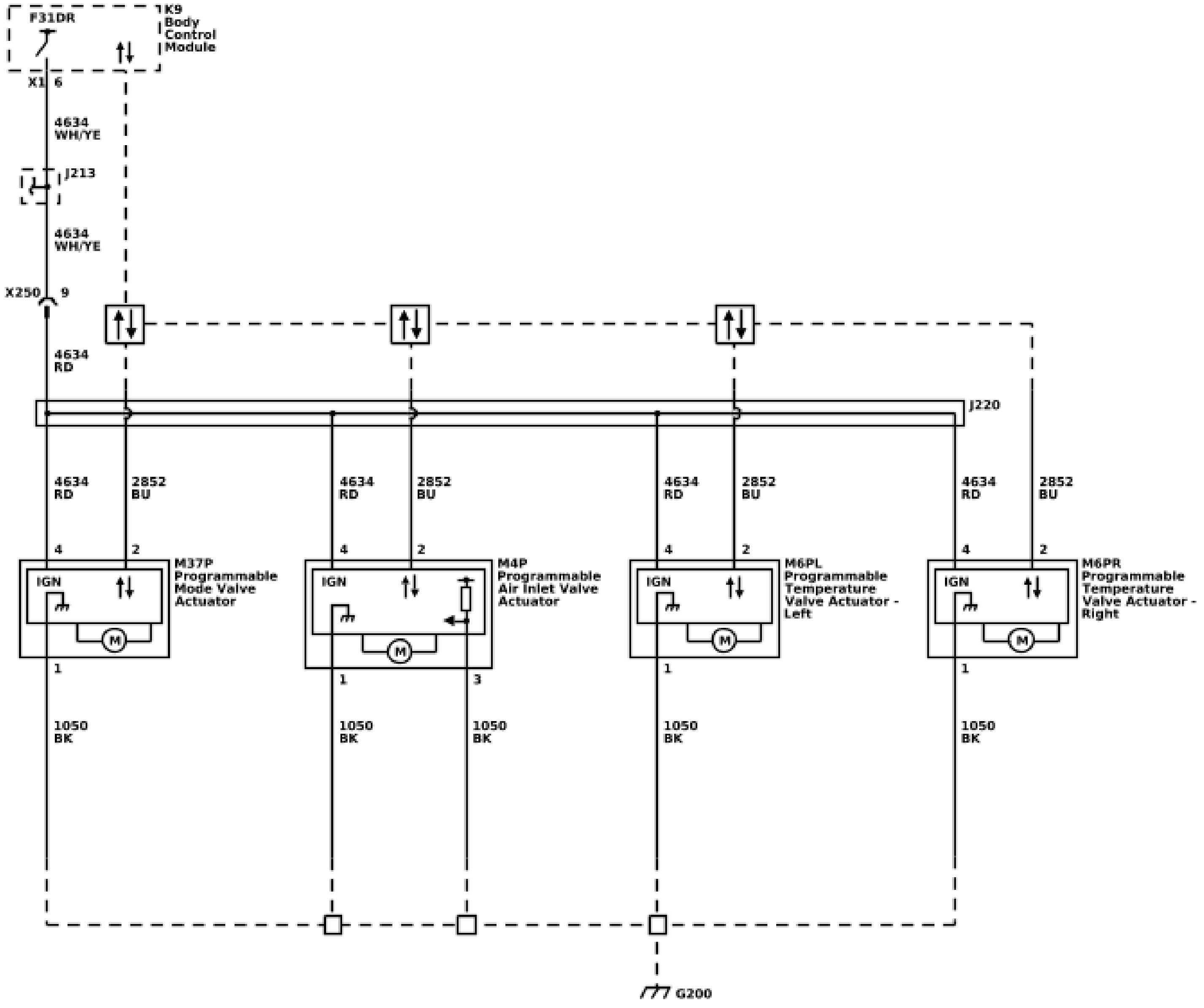
6885570

## HVAC Schematics (HVAC Controls - Backlighting, Indicators, and Display)


A22
Radio
Control
P7
Display
A90
Logic
X1
1
15
16
17
14
22
21
25
26
23
24
18
11748
VT/YE
11758
GN/BN
11759
GN/WH
11760
GY/VT
11757
GN/YE
11749
GN/GY
11754
BN/GN
11755
GN/VT
11756
BN/BU
11752
BU/VT
11753
YE/VT
11761
BN/WH
1
15
16
17
14
22
21
25
26
23
24
18
A26
Heater and Air
Conditioning
User Interface
Control - Front
A90
Logic
5V
RD
BU
AM
ON/
OFF
AUTO
A/C
HEAT
MAX
REAR
WH
RD
BU
AM
ON/
OFF
AUTO
A/C
HEAT
MAX
REAR
WH

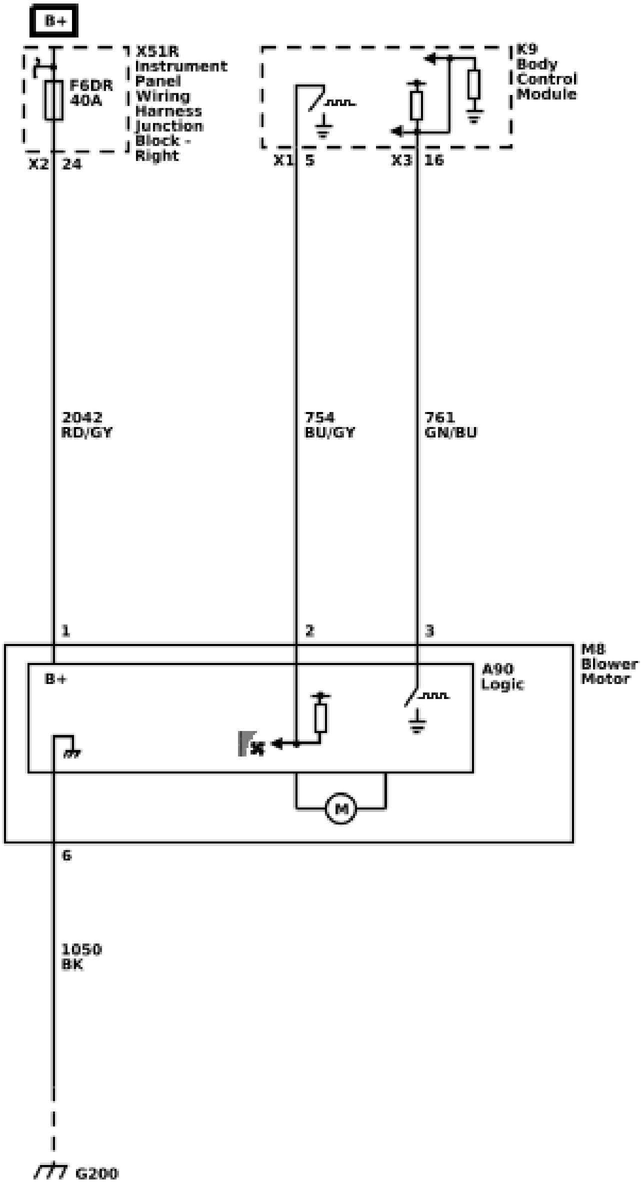
6885571

## HVAC Schematics (Front Mode and Temperature Valve Actuators)


F31DR
K9
Body
Control
Module
X1 6
4634
WH/YE
J213
4634
WH/YE
X250 9
4634
RD
J220
4634
RD
2852
BU
4
2
M37P
Programmable
Mode Valve
Actuator
IGN
M
1
1050
BK
4634
RD
2852
BU
4
2
M4P
Programmable
Air Inlet Valve
Actuator
IGN
M
1
3
1050
BK
1050
BK
4634
RD
2852
BU
4
2
M6PL
Programmable
Temperature
Valve Actuator -
Left
IGN
M
1
1050
BK
4634
RD
2852
BU
4
2
M6PR
Programmable
Temperature
Valve Actuator -
Right
IGN
M
1
1050
BK
G200

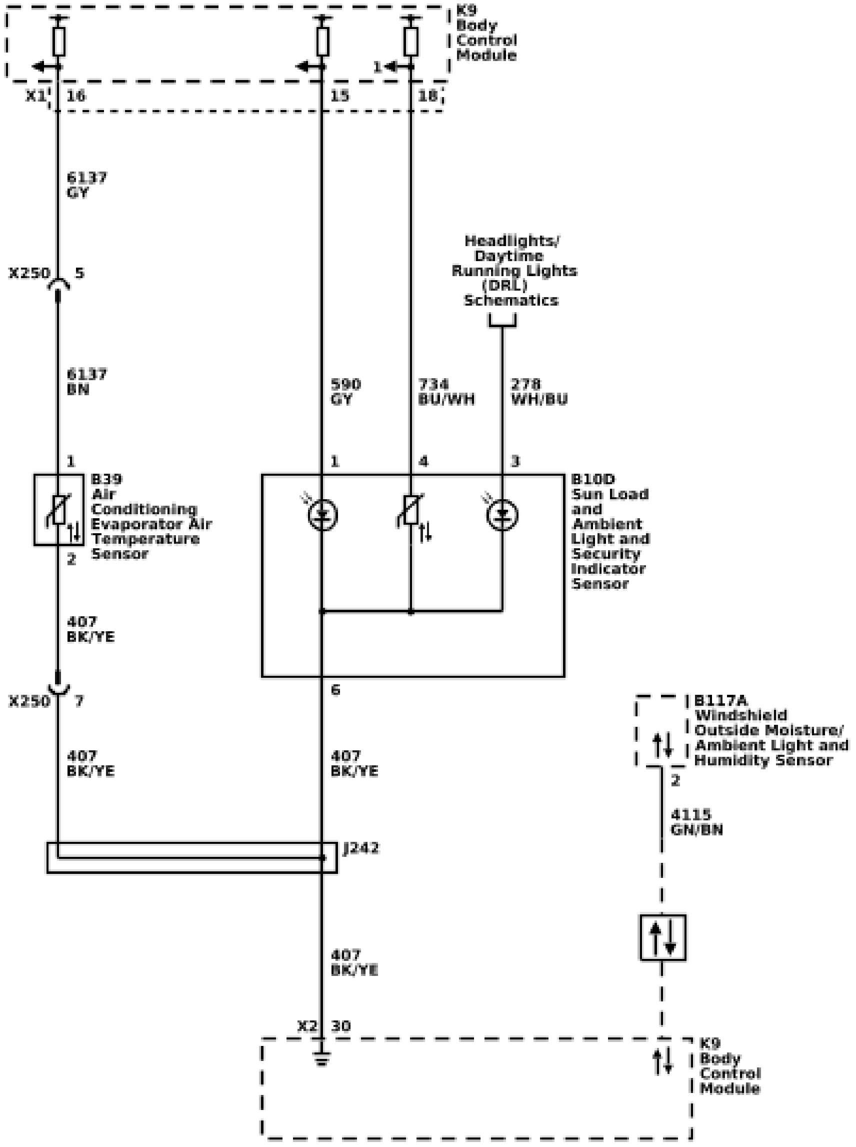
6885572

## HVAC Schematics (Front Blower Motor)


B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F6DR
40A
X2 24
K9
Body
Control
Module
X1 5
X3 16
2042
RD/GY
754
BU/GY
761
GN/BU
1
2
3
M8
Blower
Motor
A90
Logic
B+
M
6
1050
BK
G200

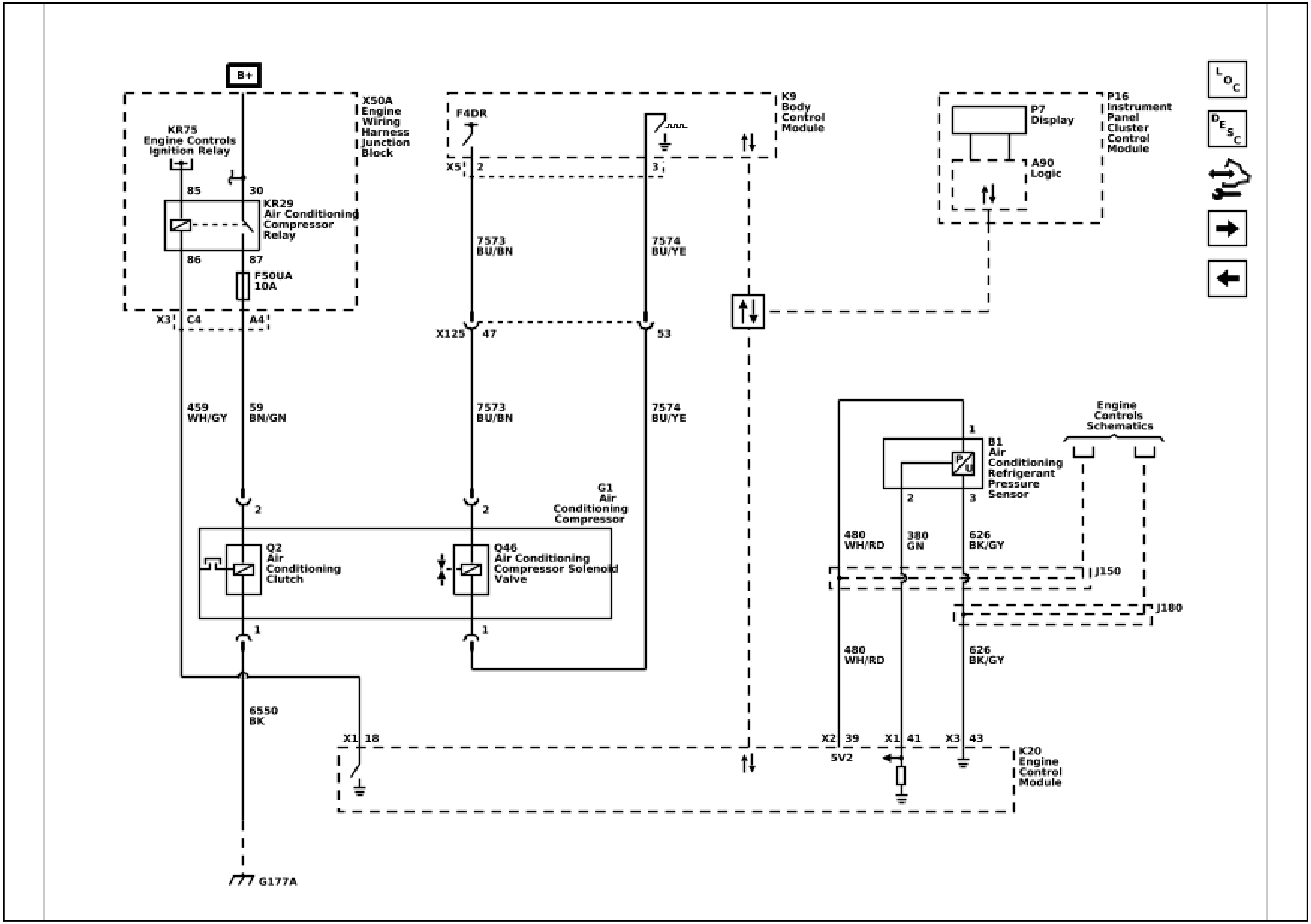
6885573

## HVAC Schematics (Ambient Light/Sunload Sensor, Windshield Moisture Sensor, and A/C Evaporator Temperature Sensor)

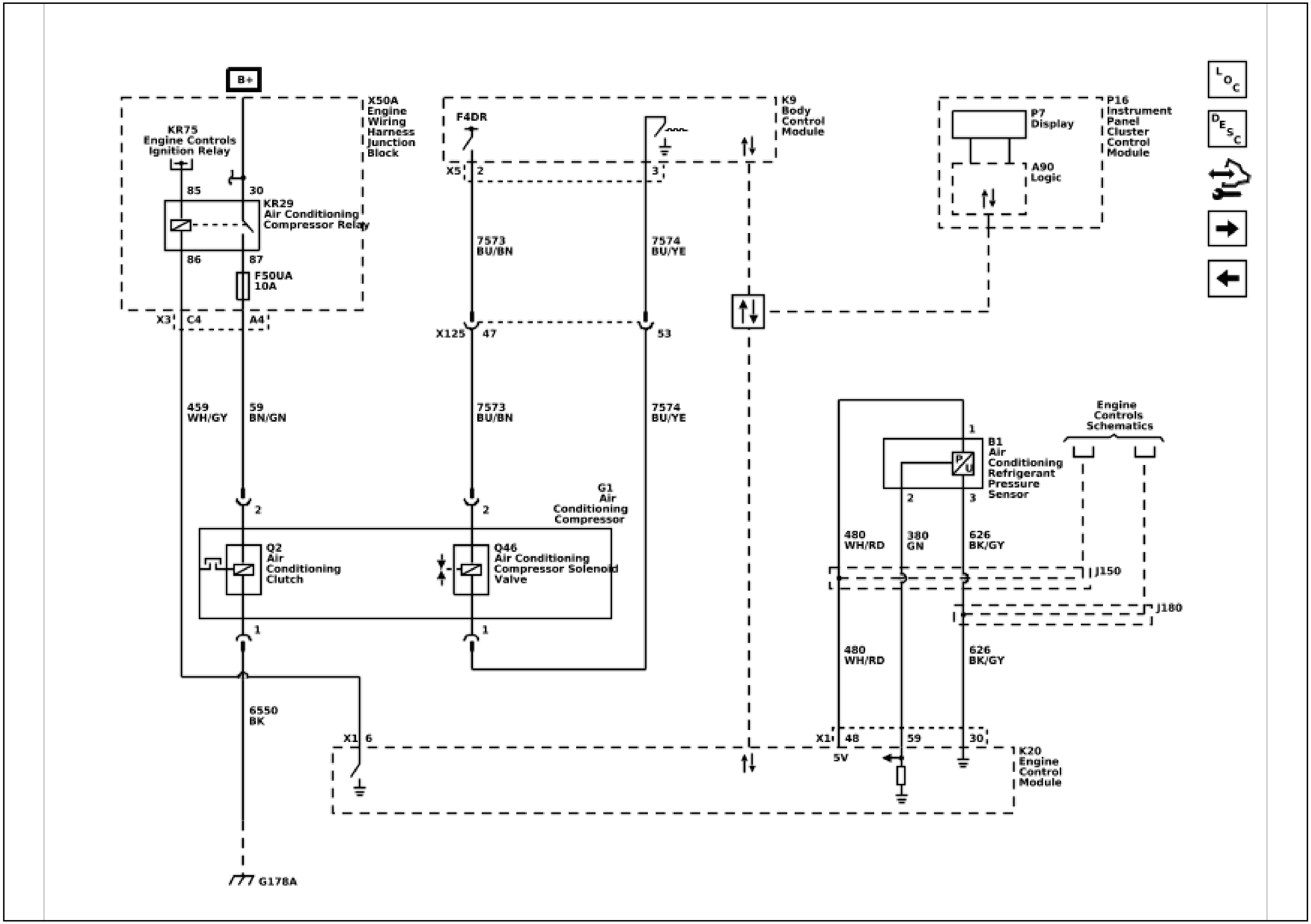

K9
Body
Control
Module
1
X1
16
15
18
6137
GY
X250
5
6137
BN
1
B39
Air
Conditioning
Evaporator Air
Temperature
Sensor
2
407
BK/YE
X250
7
407
BK/YE
Headlights/
Daytime
Running Lights
(DRL)
Schematics
590
GY
734
BU/WH
278
WH/BU
1
4
3
B10D
Sun Load
and
Ambient
Light and
Security
Indicator
Sensor
6
407
BK/YE
J242
407
BK/YE
X2
30
B117A
Windshield
Outside Moisture/
Ambient Light and
Humidity Sensor
2
4115
GN/BN
K9
Body
Control
Module

6885574

## HVAC Schematics (A/C Compressor Controls (L84 / L87))


B+
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
85
30
KR29 Air Conditioning Compressor Relay
86
87
F50UA 10A
X3
C4
A4
459 WH/GY
59 BN/GN
F4DR
K9 Body Control Module
X5
2
3
7573 BU/BN
7574 BU/YE
X125
47
53
7573 BU/BN
7574 BU/YE
2
2
G1 Air Conditioning Compressor
Q2 Air Conditioning Clutch
Q46 Air Conditioning Compressor Solenoid Valve
1
1
6550 BK
G177A
P7 Display
P16 Instrument Panel Cluster Control Module
A90 Logic
Engine Controls Schematics
B1 Air Conditioning Refrigerant Pressure Sensor
1
2
3
P
U
480 WH/RD
380 GN
626 BK/GY
J150
J180
480 WH/RD
626 BK/GY
X1 18
X2 39
X1 41
X3 43
5V2
K20 Engine Control Module
L O C
D E S C
6885575

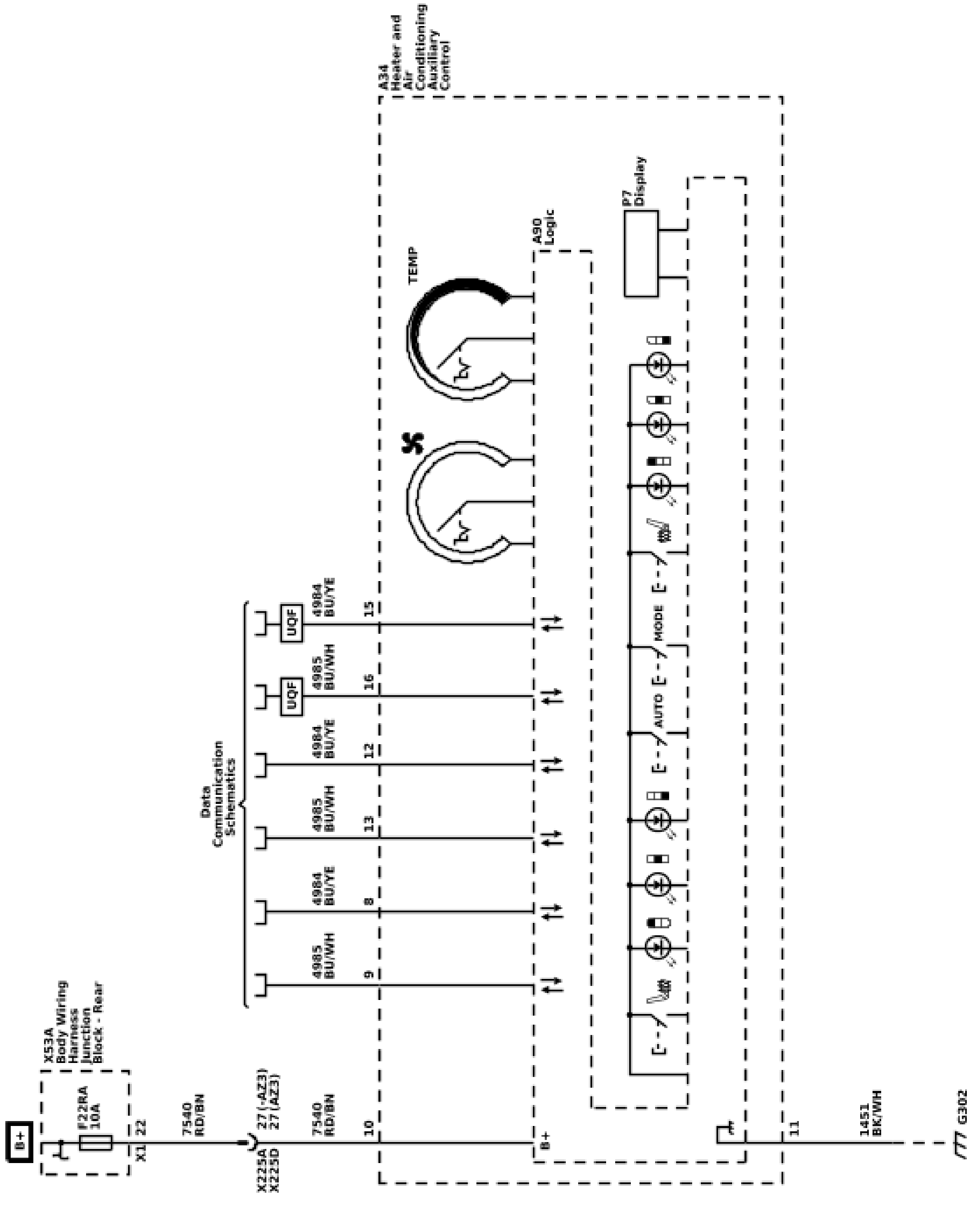
## HVAC Schematics (A/C Compressor Controls (LZ0))


B+
X50A Engine Wiring Harness Junction Block
KR75 Engine Controls Ignition Relay
85
30
KR29 Air Conditioning Compressor Relay
86
87
F50UA 10A
X3
C4
A4
459 WH/GY
59 BN/GN
K9 Body Control Module
F4DR
X5
2
3
7573 BU/BN
7574 BU/YE
X125
47
53
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
G1 Air Conditioning Compressor
Q2 Air Conditioning Clutch
Q46 Air Conditioning Compressor Solenoid Valve
2
1
6550 BK
G178A
Engine Controls Schematics
B1 Air Conditioning Refrigerant Pressure Sensor
P
U
1
2
3
480 WH/RD
380 GN
626 BK/GY
J150
J180
X1
6
48
59
30
5V
K20 Engine Control Module
L O C
D E S C

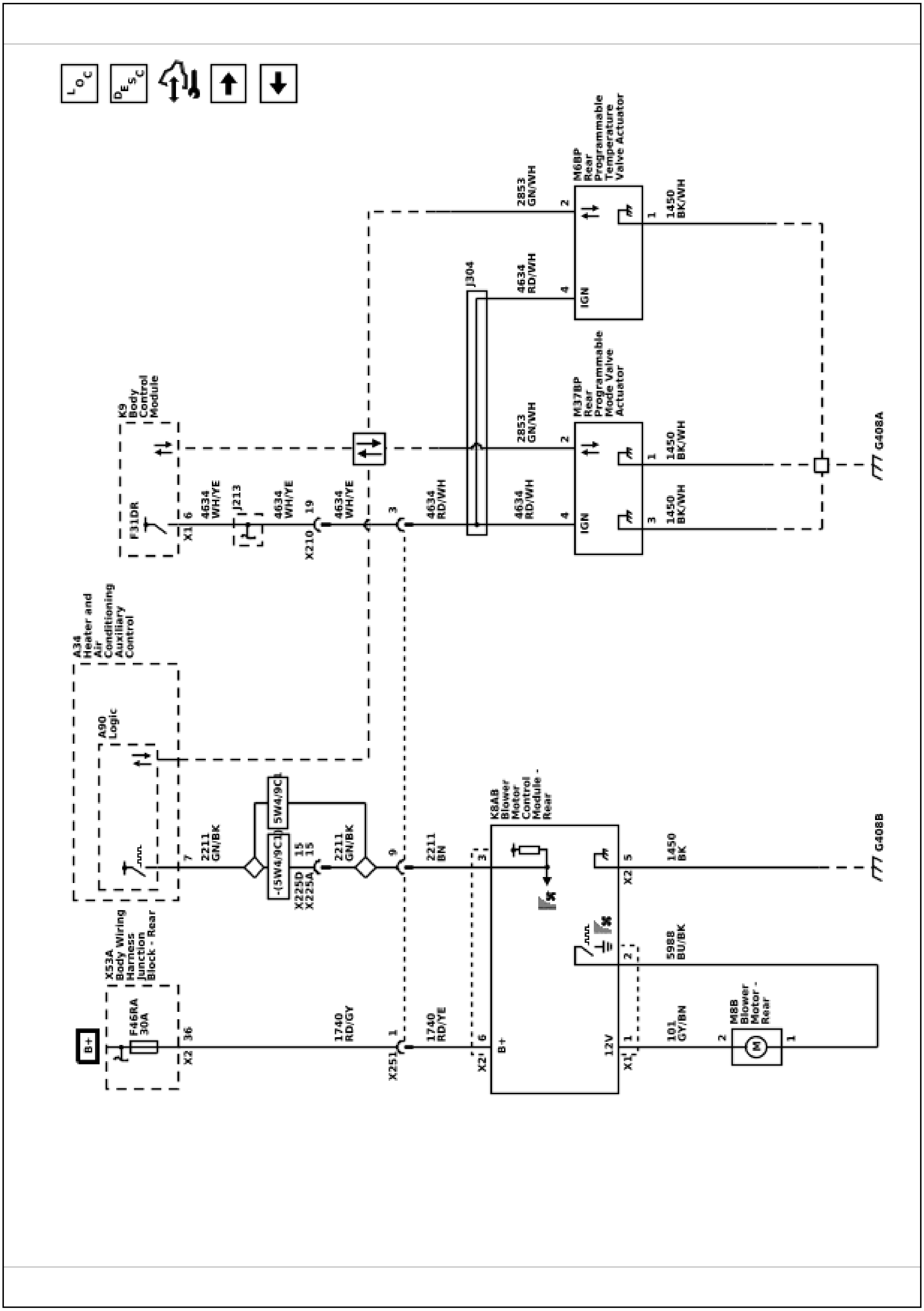
6885576

## HVAC Schematics (Auxiliary HVAC Controls Power, Ground, and Serial Data)

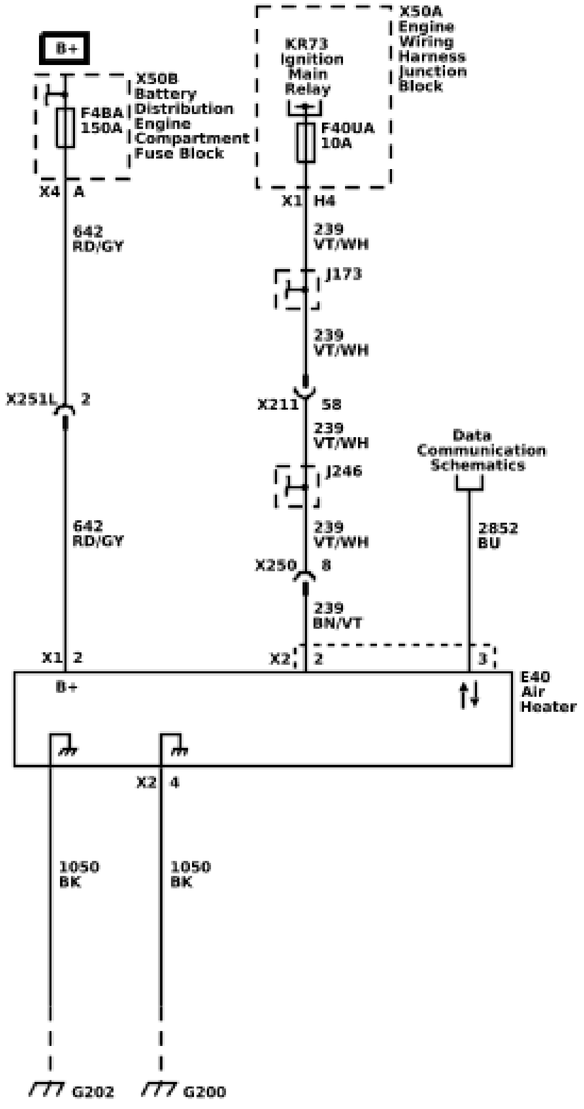
6885577


B+
X53A Body Wiring Harness Junction Block - Rear
F22RA 10A
X1 22
7540 RD/BN
X225A 27 (-AZ3)
X225D 27 (AZ3)
7540 RD/BN
10
Data Communication Schematics
4985 BU/WH
9
4984 BU/YE
8
4985 BU/WH
13
4984 BU/YE
12
UQF
4985 BU/WH
16
UQF
4984 BU/YE
15
A34 Heater and Air Conditioning Auxiliary Control
TEMP
A90 Logic
P7 Display
AUTO
MODE
B+
11
1451 BK/WH
G302

## HVAC Schematics (Auxiliary HVAC Blower Motor, Mode and Temperature Actuators)


6885578
B+
X53A Body Wiring Harness Junction Block - Rear
F46RA 30A
X2 36
1740 RD/GY
X251 1
1740 RD/YE
A34 Heater and Air Conditioning Auxiliary Control
A90 Logic
7
2211 GN/BK
X225D 15
X225A 15
5W4/9C1
2211 GN/BK
9
2211 BN
K9 Body Control Module
F31DR
X1 6
4634 WH/YE
J213
4634 WH/YE
X210 19
4634 WH/YE
3
4634 RD/WH
J304
4634 RD/WH
2853 GN/WH
K8AB Blower Motor Control Module - Rear
X2 6
B+
3
5
1450 BK
G408B
2
5988 BU/BK
X1 1
12V
101 GY/BN
M8B Blower Motor - Rear
2
1
M
M37BP Rear Programmable Mode Valve Actuator
IGN
4
2
3
1
1450 BK/WH
1450 BK/WH
G408A
M68P Rear Programmable Temperature Valve Actuator
4634 RD/WH
2853 GN/WH
IGN
4
2
1
1450 BK/WH

## HVAC Schematics (Air Heater (C3A))


B+
X50B
Battery
Distribution
Engine
Compartment
Fuse Block
F4BA
150A
X4 A
642
RD/GY
X251L 2
642
RD/GY
X1 2
B+
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition
Main
Relay
F40UA
10A
X1 H4
239
VT/WH
J173
239
VT/WH
X211 58
239
VT/WH
J246
239
VT/WH
X250 8
239
BN/VT
X2 2
Data
Communication
Schematics
2852
BU
3
E40
Air
Heater
X2 4
1050
BK
1050
BK
G202
G200

6885579

# Description and Operation

## Automatic HVAC Description and Operation

The air temperature and the air delivery description and operation are divided into the following:

- HVAC Control Components
- Air Speed and Blower Motor (Front)
- Air Speed and Blower Motor (Rear)
- Air Delivery (Front)
- Air Delivery (Rear)
- Heating and A/C Operation
- Recirculation Operation
- Automatic Operation
- Engine Coolant and A/C System Refrigerant

## HVAC Control Components

### K9 Body Control Module

The body control module (BCM) is a CAN device that interfaces between the operator and the HVAC system to maintain and control desired air temperature and air distribution settings. The BCM provides a device ON-Signal for the HVAC controls. The BCM provides blower, air delivery mode and air temperature control.

### A22 Radio Control

The radio control assembly contains the information display/ touchscreen and is the interface between the A26 Heater and Air Conditioning User Interface Control–Front and the vehicle. The selected values are passed to the BCM via serial data.

### A26 Heater and Air Conditioning User Interface Control–Front

The HVAC control contains switches and knobs which are used to control the main functions of the HVAC system, with some controls only available through the infotainment display. Individual signal circuits between the A 22 Radio control and the A26 Heater and Air Conditioning User Interface Control–Front are used to communicate control inputs. Indicators and backlighting are also operated through dedicated circuits.

### A34 Heater and Air Conditioning Auxiliary Control

The HVAC controls – auxiliary contains all switches, buttons, and dials which are required to control the functions of the rear HVAC system and serve as interface between the operator and the BCM. Mode and temperature selections are passed to the BCM via serial data. Rear blower motor speed is controlled via a signal circuit from the HVAC controls – auxiliary to the blower motor control module- auxiliary.

### Actuators (Front)

Doors in the HVAC case assembly are used to control air flow. The BCM operates the doors through the use of actuators, with one actuator being used for each door. The system has the following air control doors and associated actuators: mode, left and right temperature, and recirculation.

Each actuator used in the system is a LIN device controlled by the BCM. The BCM supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

### Actuators Rear

Two additional actuators are used in the system to control the airflow and temperature for the rear seat passengers: rear temperature, and rear mode.

Each actuator is a LIN device controlled by the BCM. The auxiliary HVAC control supplies a 12 V reference voltage to the actuators, and ground is provided by the wiring harness. When the BCM sends a request message to the actuator, the actuator then operates internal stepper motors to move the door to the required position.

### Air Speed and M8 Blower Motor (Front)

The selected blower motor speed is passed from the controls to the BCM via serial data.

The motor uses a fused B+, ground, control, and speed output signal circuits to operate. The blower motor speed is controlled by increasing or decreasing the voltage drop on the ground side of the blower motor speed control circuit. The BCM provides a low side pulse width modulation (PWM) signal to the blower motor to request a specific motor speed. The blower motor internal circuitry translates the PWM signal and drives the motor accordingly.

The blower motor has a signal wire used to output a speed signal. The signal is monitored by the BCM. The BCM monitors the blower motor speed to modify the total commanded engine coolant flow rate, which is a percentage of available coolant flow sent to the heater core for occupant comfort and windshield defrosting. The HVAC Blower Speed is monitored so that the ECM can optimize engine coolant flow for fuel economy and emissions.

### Afterblow

Afterblow is a feature that dries the evaporator core by operating the blower motor after the engine is turned OFF under certain conditions. This reduces the amount of microbial growth that can create undesirable odors. For additional information on afterblow, the default setting, and changing the setting, refer to [Link target (target-id 328146-) not found] .

### Air Speed and M8B Blower Motor — Rear

An auxiliary blower motor is used to regulate the air speed from the rear passenger ducts. The rear blower speed may be selected from the front or rear HVAC controls. The selected value is sent to the A34 HVAC Controls – Auxiliary via serial data.

The K8 Blower Motor Control Module — Auxiliary controls the speed of the rear blower motor by increasing or decreasing the voltage drop on the ground side of the blower motor. The A34 HVAC Controls – Auxiliary provides a low side pulse width modulation (PWM) signal to the blower motor control module — auxiliary via the blower motor speed control circuit. As the requested blower speed increases, the HVAC controls — auxiliary increases the amount of time that the speed signal is modulated to ground. As the requested blower speed decreases, the amount of time that the signal is modulated to ground decreases.

### Duct Air Temperature

Physical duct air temperature sensors are not used with the system. The air temperature in the air distribution ducts is calculated by the BCM based on the engine coolant temperature, coolant flow, evaporator temperature, outside air temperature, solar load, blower motor speed, air inlet door position, and temperature door position information. The BCM uses the values to calculate actuator position.

### B39 Air Conditioning Evaporator Air Temperature Sensor

The evaporator temperature sensor is a 2-wire negative temperature coefficient thermistor. The sensor operates within a temperature range of −40 to +85°C (−40 to +185°F). The sensor is installed near the evaporator core to measure the air temperature exiting the core.

Based on vehicle operating conditions and operator settings, the HVAC software algorithms will determine a target evaporator air temperature. The operation of the compressor solenoid will be adjusted as needed to quickly reach and maintain the targeted temperature.

### B1 Air Conditioning Refrigerant Pressure Sensor

The A/C refrigerant pressure sensor is a 3-wire piezoelectric pressure transducer. A 5 V reference voltage, low reference, and signal circuits enable the sensor to operate. The A/C pressure signal can be between 0.2–4.8 V. When the A/C refrigerant pressure is low, the signal value is near 0 V. When the A/C refrigerant pressure is high, the signal value is near 5 V. The engine control module (ECM) converts the voltage signal to a pressure value. When pressure is too high or too low, the ECM will not allow the A/C compressor clutch to engage.

### G1 Air Conditioning Compressor

The A/C compressor uses a conventional belt driven magnetic clutch to engage and mechanically turn the compressor. When the A/C switch is pressed, the BCM sends an A/C request message to the ECM via serial data. If specific criteria is met, the ECM then grounds the A/C compressor clutch relay control circuit, which will switch the A/C compressor clutch relay. With the relay contacts closed, battery voltage is supplied to the permanently grounded A/C compressor clutch. The A/C compressor clutch will then be activated.

This A/C system utilizes a variable displacement solenoid valve to alter the amount of displacement created by the turning of the compressor. The BCM provides both battery voltage and a pulse width modulated ground to the Q46 Air Conditioning Compressor Solenoid Valve. When the A/C switch is pressed, the BCM grounds the variable displacement solenoid using a (PWM) signal in order to determine the amount of compressor displacement. The performance of the A/C compressor is regulated based on cooling load.

### B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor (CE1)

The windshield outside moisture, ambient light, and humidity sensor is used by the wiper system to determine exterior moisture, and by the HVAC system for inside windshield temperature and humidity.

The sensors are part of a LIN windshield sensor array, and the sensor values are transmitted to the BCM via serial data.

This sensor assembly provides information to the HVAC system about:

- Relative humidity level at windshield (passenger compartment side)
- Temperature of the windshield (passenger compartment side)
- Temperature of the humidity sensor element

The relative humidity sensor measures the relative humidity of the passenger compartment side of the windshield. It also detects the temperature of the windshield surface on the passenger compartment side. Both values are used as control inputs for the BCM application to calculate the fog risk on windshield compartment side and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield. The humidity sensor element temperature sensor supplies the temperature of the humidity sensor element. It is only needed if the thermal contact between the humidity sensing element and the inside windshield surface is not sufficient.

**B10D Sun Load and Ambient Light and Security Indicator Sensor**

The ambient light/sunload sensor includes the solar sensor and passenger compartment temperature sensor.

The solar sensor is connected to a low reference and 5 V supply through the BCM. As the sunload increases, the sensor signal voltage also increases and vice versa. The signal provided to the BCM varies between 1.2–4.85 V.

The passenger compartment temperature sensor is a negative temperature coefficient thermistor, connected to a low reference and 5 V supply through the BCM. As the air temperature increases, the sensor resistance decreases. The signal varies between 0–5 V.

Bright or high intensity light can cause the vehicles interior temperature to increase. The HVAC system uses the sensor values and compensates for the increased temperature to maintain the system settings.

**E40 Air Heater (C3A)**

Some models are equipped with an auxiliary electric heater to assist in warming the passenger compartment when the engine coolant has not sufficiently warmed to operating temperature. The air heater is a LIN device. The heater uses an ignition circuit, battery voltage circuit, ground circuit, and a serial data signal from the BCM to operate.

The heater is a 12 V positive temperature coefficient heating element located in the HVAC case just downstream of the traditional heater core. The system will activate the heater when the outside temperature is less than approximately 8°C (46°F), the engine coolant temperature is less than approximately 75°C (167°F), and the temperature blend door is commanded to the full hot position.

## Air Delivery (Front)

The BCM controls the distribution of air by the use of recirculation and mode door actuators. The modes that may be selected are:

- Defrost: windshield outlet
- Panel: dashboard outlets
- Floor: front footwell outlets
- Defog: defrost + floor
- Bi-level: panel + floor
- Tri-level: panel + defrost + floor
- Hi-level: panel + defrost

The desired air distribution mode can be selected with the air distribution switches at the HVAC control. The HVAC control delivers the values to the BCM via serial data. The BCM sends a request to the mode door actuator to move the door to the required position. Depending on the position of the door, air is distributed through various ducts leading to the outlets in the dash. When defrost airflow is active, the BCM will move the recirculation actuator to outside air, to aid in reducing window fogging. When defrost is selected the blower motor will be activated, regardless of the coolant temperature. A/C is available in all modes.

Refer to the owners manual for operation of the HVAC controls and mode selection.

**Recirculation Operation**

The recirculation switch is integrated into the HVAC control. The selected recirculation setting is sent to the BCM via serial data. The BCM controls the air intake using the recirculation actuator. In recirculation mode the recirculation door is positioned to block outside air from entering and circulate the air within the vehicle. In outside air mode the recirculation door is positioned to route outside air into the vehicle.

Recirculation is only available if the defrost mode is not active. When the defrost mode is active, the recirculation actuator positions the recirculation door so that outside air is circulated to the windshield to reduce fogging.

In automatic mode the values of the sensors are used as inputs for the BCM to calculate the fog risk on the passenger compartment side of the windshield. The A/C compressor and the defrost mode may be activated to prevent or remove fog on the passenger compartment side of the windshield.

In automatic mode, a partial recirculation mode may be commanded to accelerate cabin heating or cooling and reduce energy usage. The recirculation indicator remains illuminated at all times, regardless of the actual operating mode determined by the system.

### Air Delivery (Rear)

The BCM control module controls the distribution of air by the mode door actuator – auxiliary. The modes that may be selected are:

- AUTO
- Floor
- Bi-Level
- Vent

The desired rear air distribution mode can be selected with the Mode switch at the HVAC control – auxiliary. The HVAC control – auxiliary delivers the values to the BCM via serial data. The BCM controls the mode door actuator – auxiliary via LIN bus to move the door to the calculated position. Depending on the position of the door, air is distributed through various ducts.

### Heating and A/C Operation

The purpose of the heating and A/C system is to provide heated and cooled air to the interior of the vehicle. The A/C system will also remove humidity from the interior and reduce windshield fogging. Regardless of the temperature setting, the following may affect the rate that the HVAC system can achieve the desired temperature:

- Recirculation setting
- Difference between inside and desired temperature
- Blower motor speed setting
- Mode setting
- Dashboard outlet open/closed position

When the A/C switch or the AUTO switch is pressed, the HVAC control sends a signal to the BCM via serial data. The BCM evaluates this signal and sends an A/C request signal to the ECM via CAN-Bus. The ECM checks all preconditions before releasing and if all conditions are met sends a release signal back to the BCM. The A/C compressor is activated by the BCM. The BCM supplies battery voltage to the A/C compressor solenoid. When the A/C switch is pressed, the BCM provides a pulse width modulation (PWM) signal to the A/C compressor solenoid in order to command the performance of the A/C compressor. The performance of the A/C compressor is regulated using evaporator temperature and engine load.

The A/C indicator does not indicate the compressor is currently active. The A/C indicator shows that A/C has been requested and the system will activate the compressor as needed.

The following conditions must be met in order to activate the A/C compressor:

- Battery voltage is between 9–18 V
- Engine coolant temperature is less than 124°C (255°F)
- Engine speed is greater than 600 RPM
- Engine speed is less than 5 500 RPM
- A/C high side pressure is between 269–2 929 kPa (39–425 PSI)
- Throttle position is less than 100%
- Evaporator temperature is greater than 3°C (38°F)
- ECM does not detect immoderate torque load
- ECM does not detect insufficient idle quality
- The ambient temperature is above 1°C (34°F)

The sensor information is used by the ECM to determine the following:

- The A/C high side pressure
- An A/C system load on the engine
- An immoderate A/C high side pressure
- The heat load at the A/C condenser

The air streams into the passenger compartment through the heater core and the evaporator core. The air temperature actuator drives the mixed air door to direct the airflow. If the interior temperature should be increased, the mixed air door is put into the position in which more air streams through the heater core. If the interior temperature should be decreased, the mixed air door is put into the position in which more air streams through the evaporator core.

### Automatic Operation

In automatic operation, the BCM maintains the comfort level inside of the vehicle by controlling the A/C compressor solenoid, the blower motor, the air temperature actuators, mode actuator and recirculation actuator.

The automatic mode indicator shows that the system is in full automatic operation. If an individual setting is changed (excluding temperature), the automatic indicator will turn off, and that function will enter manual control. All other functions will remain under automatic control unless manually changed.

To put the HVAC system in automatic mode, the following is required:

1. The auto switch must be activated.
2. The air temperature switch must not be in either the full hot or full cold position.

Once the desired temperature is reached, the blower motor, mode, recirculation and temperature actuators automatically adjust to maintain the temperature selected. The BCM performs the following functions to maintain the desired air temperature:

- Monitors the following:
  - Ambient (outside) air temperature sensor
  - Passenger compartment temperature sensor
  - Calculated front duct air temperatures
  - Auxiliary duct air temperature sensors
  - Windshield temperature and inside moisture sensor (ASV or CE1)
  - Evaporator temperature sensor
  - Ambient light/sunload sensor
- Regulate the blower motor speed
- Regulate the rear blower motor speed
- Position the air temperature actuators
- Position the mode door actuators
- Position the recirculation actuator
- Control of the A/C compressor solenoid

When the temperature setting is set to full hot, the blower speed will increase gradually as the coolant warms to normal operating temperature. When normal engine operating temperature is reached the blower stays on high speed and the air temperature actuators stays in the full heat position.

When the temperature setting is set to full cold, the blower will immediately operate at high speed and the air temperature actuators move to full cold position. The mode actuator moves to the panel position and the recirculation actuator moves to the recirculation position.

Under cold ambient temperatures, the automatic HVAC system provides heat in the most efficient manner. The operator can select an extreme temperature setting but the system will not warm the vehicle any faster. Under warm ambient temperatures, the automatic HVAC system also provides air conditioning in the most efficient manner. Selecting an extreme cool temperature will not cool the vehicle any faster.

In automatic mode the values of the windshield temperature and inside moisture sensor are used as control inputs for the BCM application to calculate the fog risk on the passenger compartment side of the windshield and ability to reduce fuel consumption by decreasing A/C compressor power to a minimum without causing any fog. The A/C compressor and the defrost mode are activated to prevent or remove fog on the passenger compartment side of the windshield. The sensor will also enable partial recirculation mode in order to improve heat-up performance of the passenger compartment under cold ambient temperature conditions without the risk of mist build-up on the windshield.

## Engine Coolant and A/C System Refrigerant

For information on engine coolant, coolant flow, A/C refrigerant, and the A/C refrigerant cycle, refer to [Link target (target-id 162334-) not found] .

## Section 9

# Power and Signal Distribution

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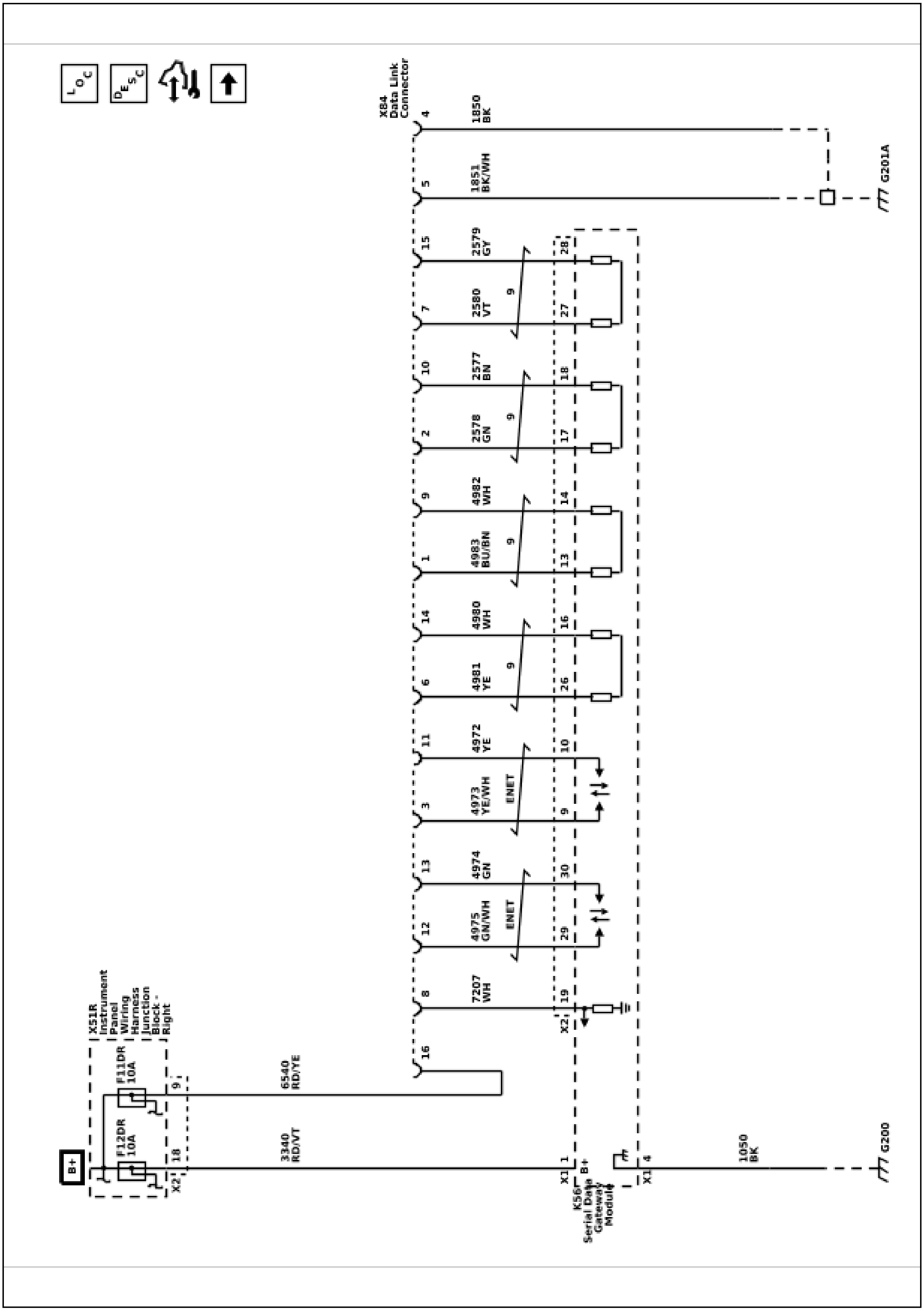
# Power and Signal Distribution

## Data Communications

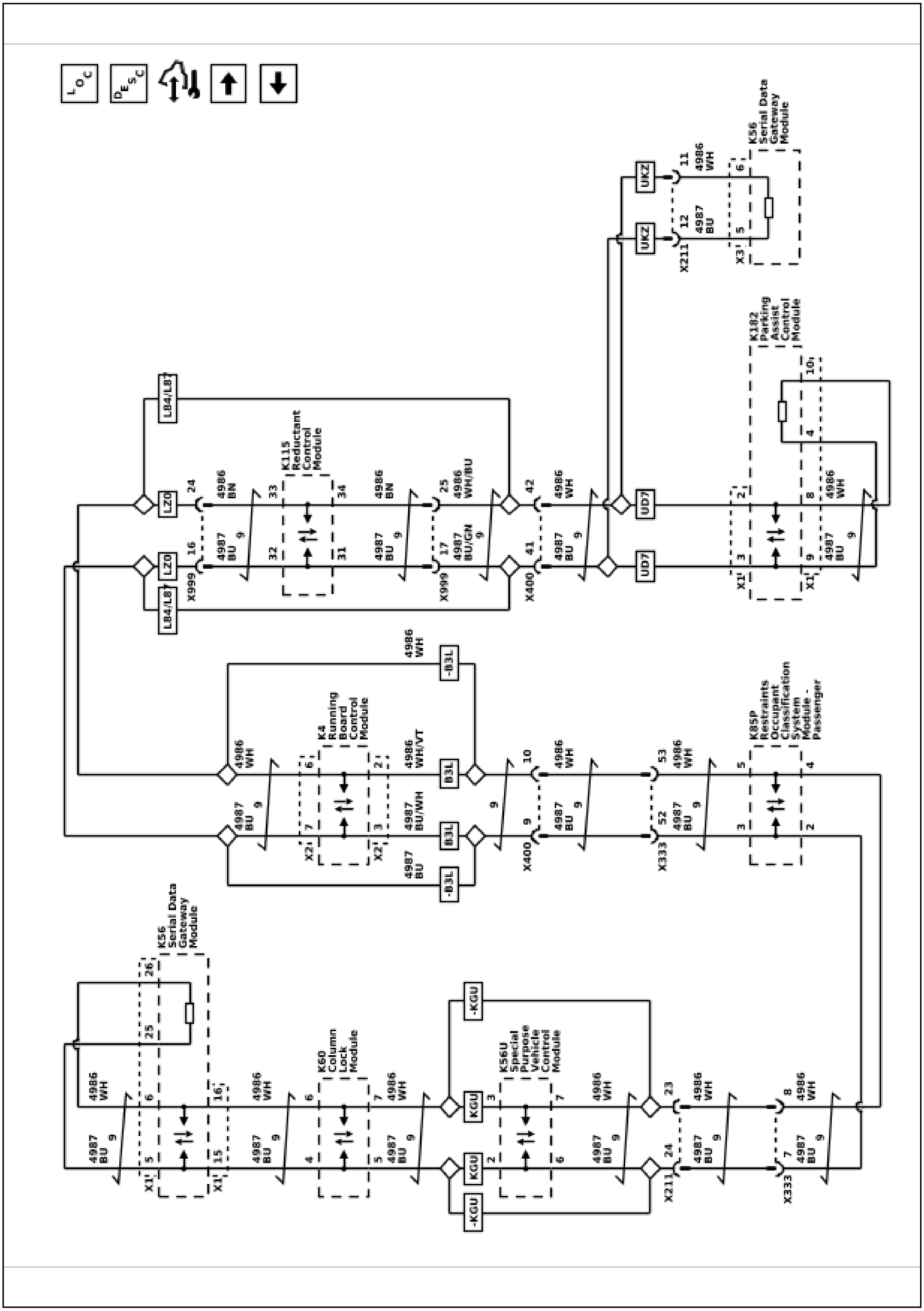
### Schematic and Routing Diagrams

Data Communication Schematics (Data Link Connector and Serial Data Gateway Module Power and Ground)

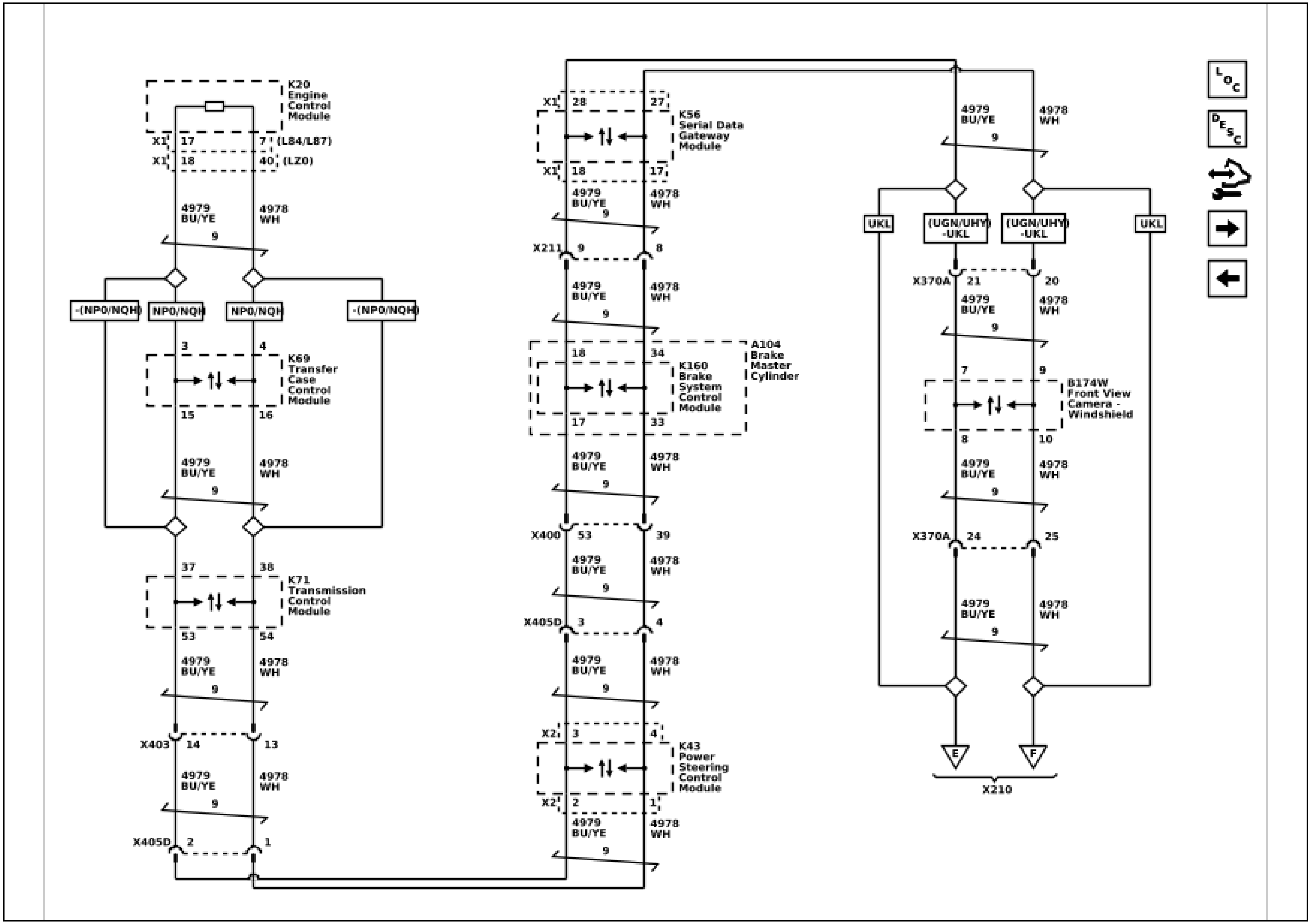

B+
F12DR 10A
F11DR 10A
X51R Instrument Panel Wiring Harness Junction Block - Right
X2 18
9
3340 RD/VT
6540 RD/YE
X84 Data Link Connector
16
8
7207 WH
12
4975 GN/WH
ENET
13
4974 GN
3
4973 YE/WH
11
4972 YE
6
4981 YE
9
14
4980 WH
1
4983 BU/BN
9
4982 WH
2
2578 GN
10
2577 BN
7
2580 VT
15
2579 GY
5
1851 BK/WH
4
1850 BK
G201A
X1 1
X2 19
29
30
26
16
13
14
17
18
27
28
B+
K56 Serial Data Gateway Module
X1 4
1050 BK
G200

6885580

## Data Communication Schematics (CAN 1)

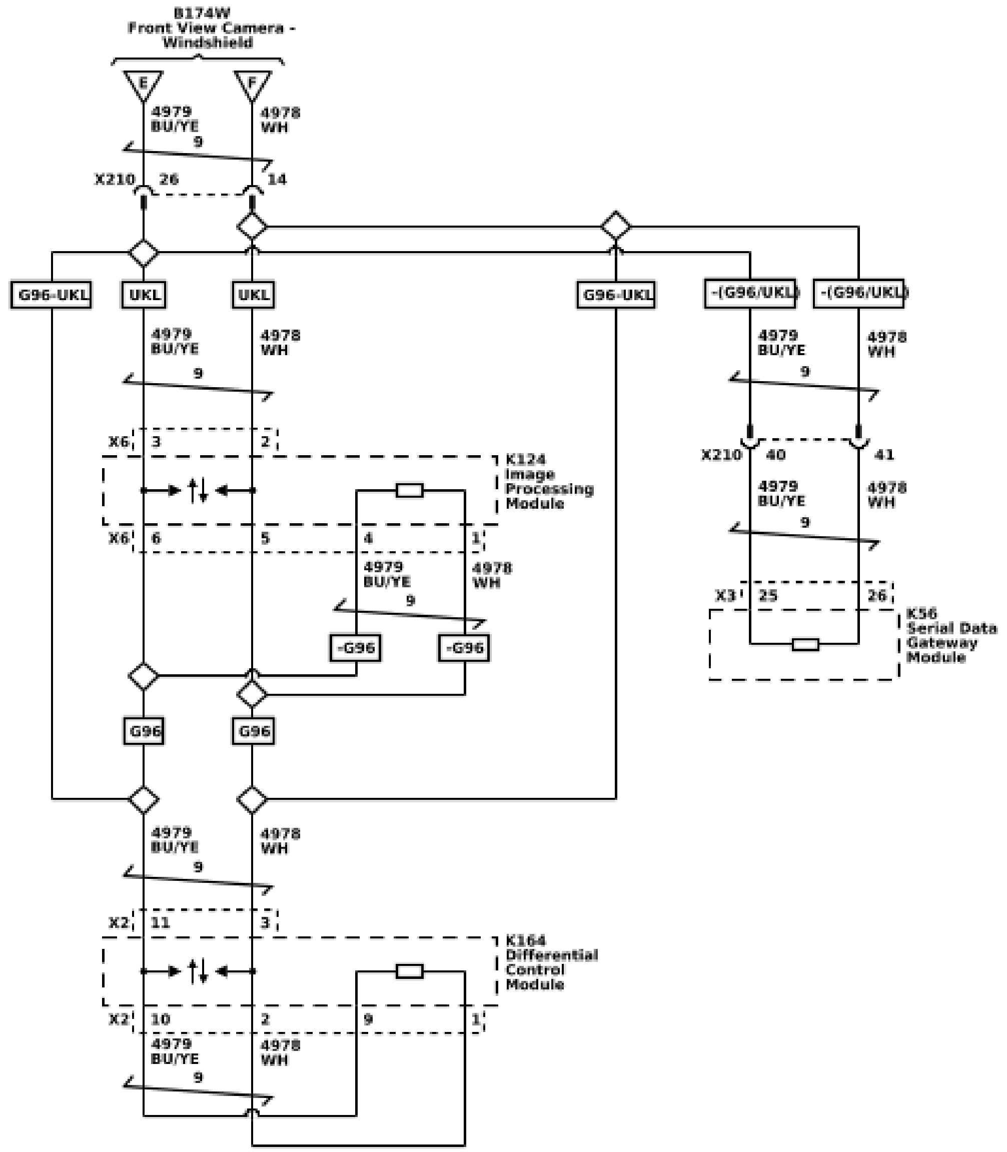

6885581
K56 Serial Data Gateway Module
K60 Column Lock Module
K56U Special Purpose Vehicle Control Module
K4 Running Board Control Module
K85P Restraints Occupant Classification System Module - Passenger
K115 Reductant Control Module
K182 Parking Assist Control Module
K56 Serial Data Gateway Module
X1
X2
X3
X211
X333
X400
X999
KGU
-KGU
B3L
-B3L
LZ0
L84/L87
UD7
UKZ
4986 WH
4987 BU
4986 BN
4986 WH/BU
4987 BU/GN
4986 WH/VT
4987 BU/WH
9

## Data Communication Schematics (CAN 2, 1 of 2)


K20 Engine Control Module
X1 17
7 (L84/L87)
X1 18
40 (LZ0)
4979 BU/YE
4978 WH
9
-(NP0/NQH)
NP0/NQH
NP0/NQH
-(NP0/NQH)
3
4
K69 Transfer Case Control Module
15
16
37
38
K71 Transmission Control Module
53
54
X403 14
13
X405D 2
1
X1 28
27
K56 Serial Data Gateway Module
X1 18
17
X211 9
8
A104 Brake Master Cylinder
18
34
K160 Brake System Control Module
17
33
X400 53
39
X405D 3
4
X2 3
4
K43 Power Steering Control Module
X2 2
1
UKL
(UGN/UHY) -UKL
(UGN/UHY) -UKL
UKL
X370A 21
20
7
9
B174W Front View Camera - Windshield
8
10
X370A 24
25
E
F
X210

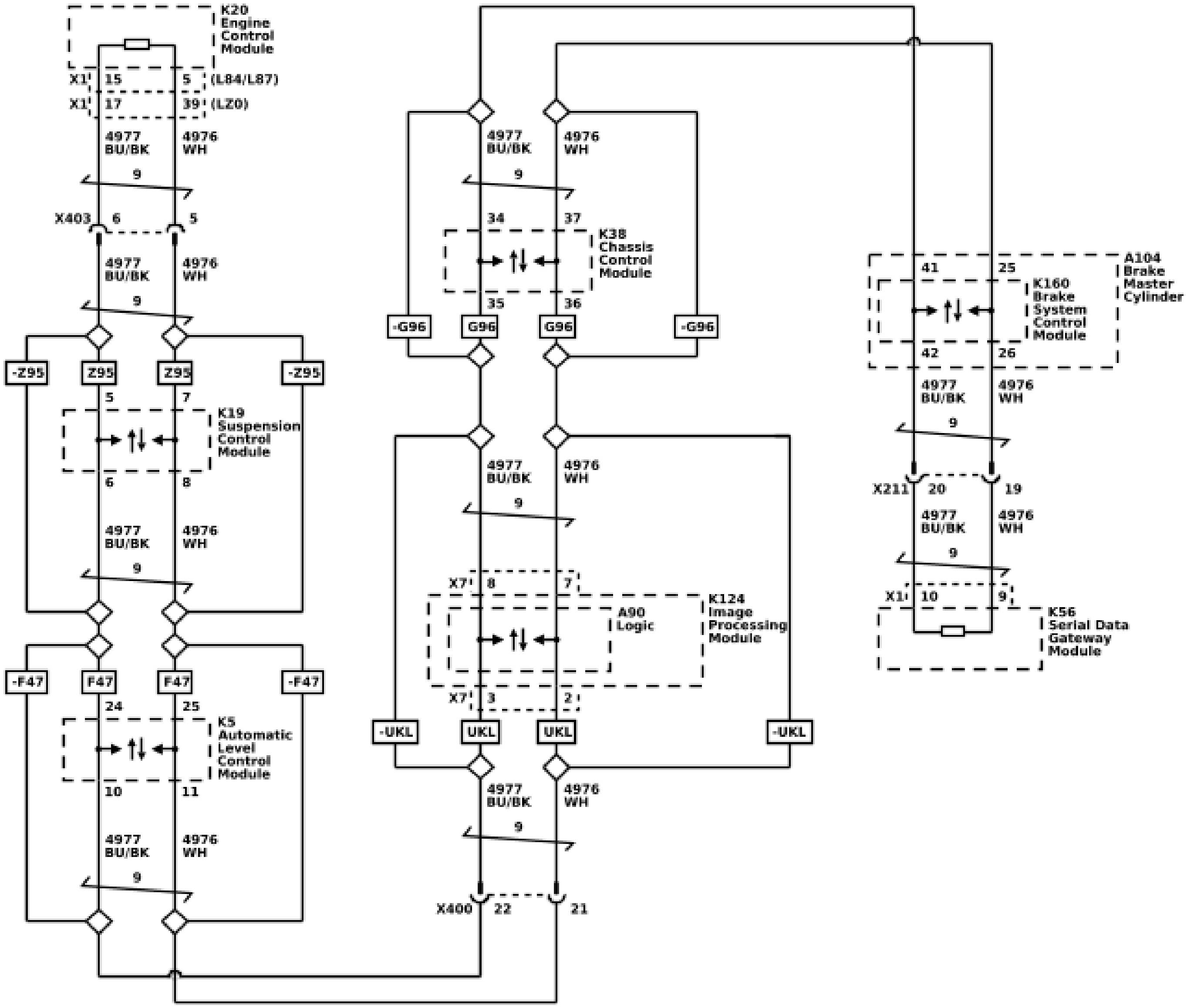
6885582

## Data Communication Schematics (CAN 2, 2 of 2)


B174W
Front View Camera - Windshield
E
F
4979
BU/YE
4978
WH
9
X210
26
14
G96-UKL
UKL
UKL
G96-UKL
-(G96/UKL)
-(G96/UKL)
X6
3
2
K124
Image
Processing
Module
X6
6
5
4
1
-G96
-G96
G96
G96
X210
40
41
X3
25
26
K56
Serial Data
Gateway
Module
X2
11
3
K164
Differential
Control
Module
X2
10
2
9
1

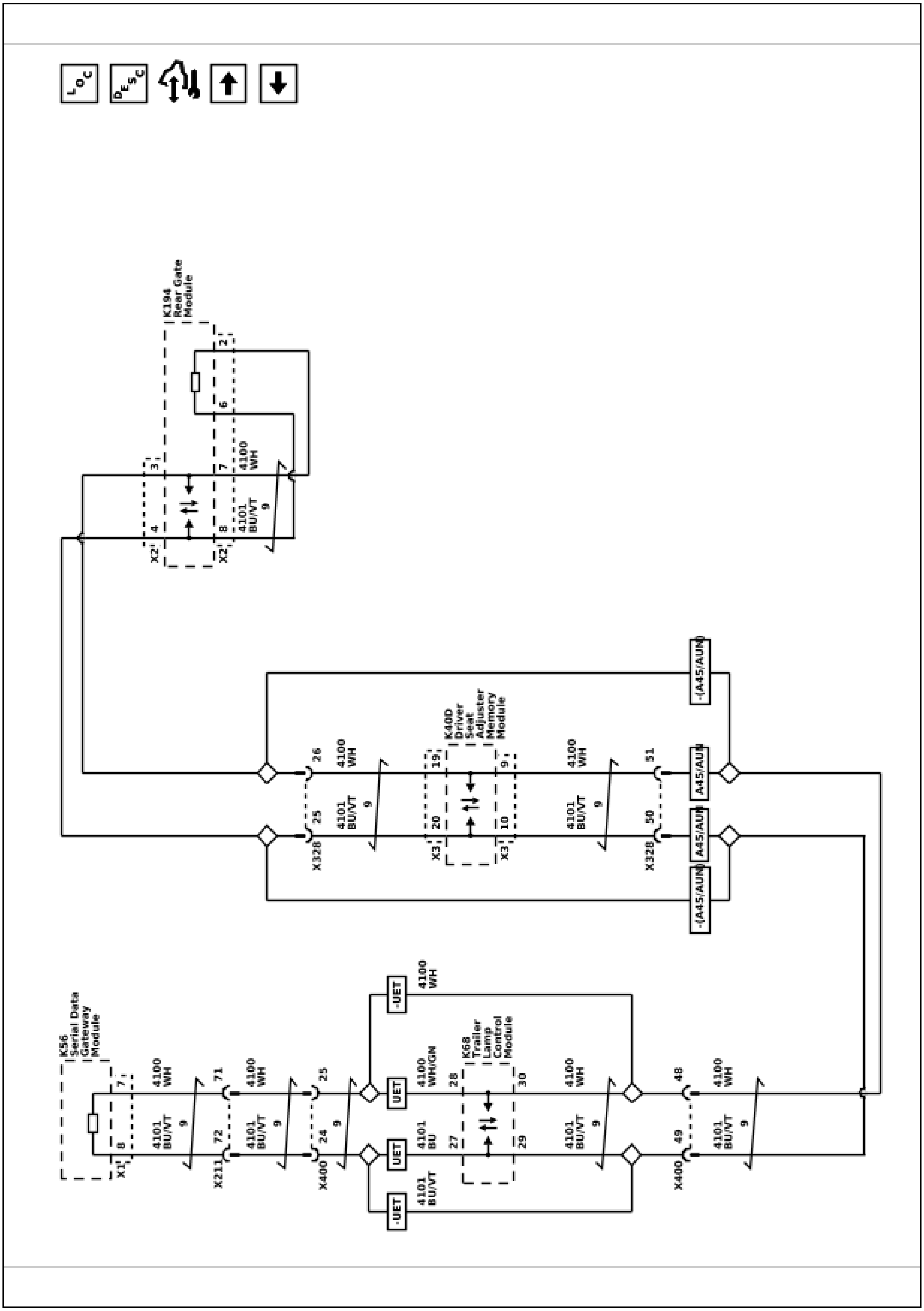
6885583

## Data Communication Schematics (CAN 3)

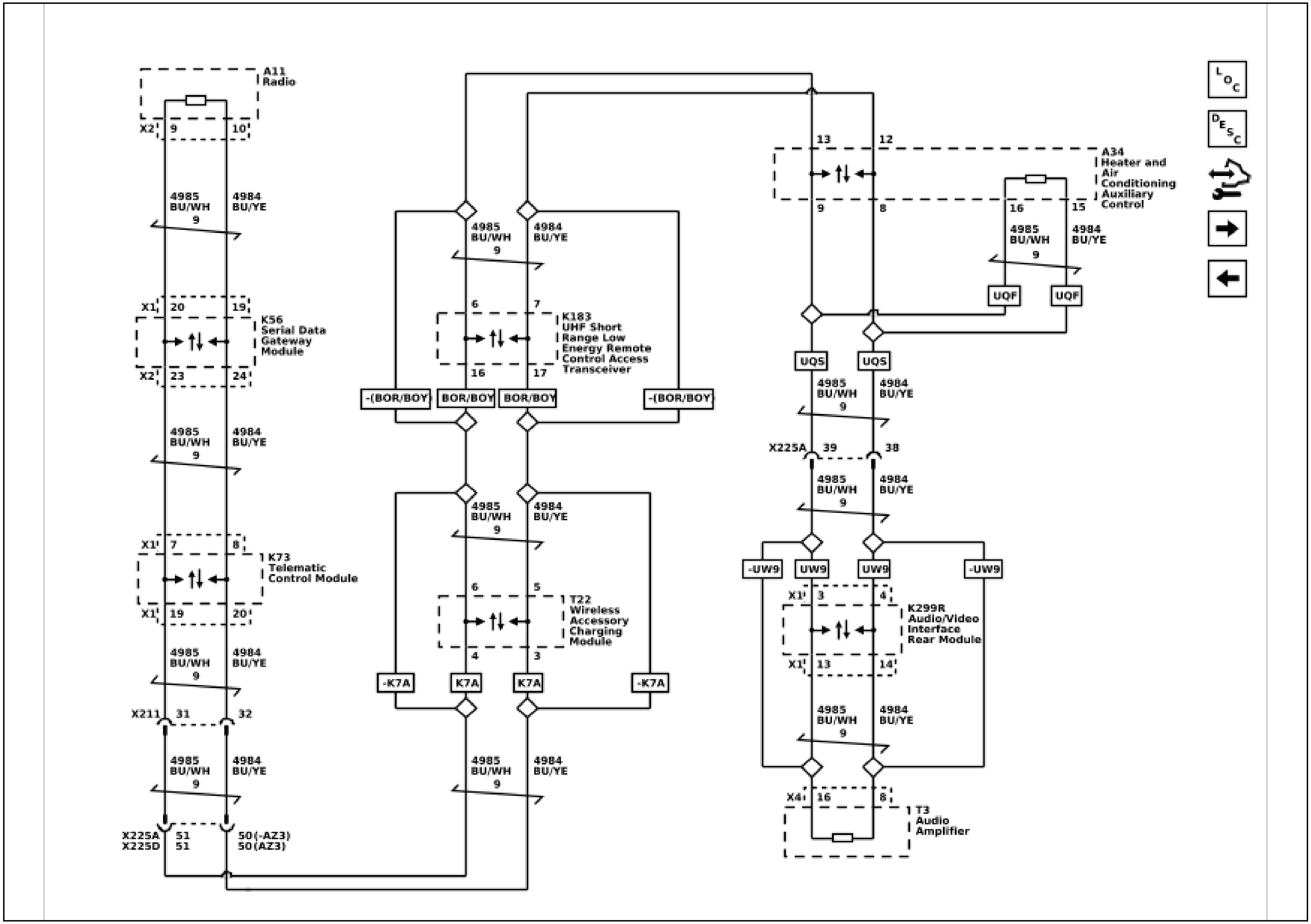

K20 Engine Control Module
X1 15 5 (L84/L87)
X1 17 39 (LZ0)
4977 BU/BK
4976 WH
9
X403 6 5
Z95
-Z95
K19 Suspension Control Module
F47
-F47
K5 Automatic Level Control Module
24
25
10
11
K38 Chassis Control Module
34
37
35
36
G96
-G96
X7 8 7
A90 Logic
K124 Image Processing Module
X7 3 2
UKL
-UKL
X400 22 21
A104 Brake Master Cylinder
K160 Brake System Control Module
41
25
42
26
X211 20 19
X1 10 9
K56 Serial Data Gateway Module

6885584

## Data Communication Schematics (CAN 4)


6885585
LOC
DESC
K194 Rear Gate Module
X2 3
X2 4
7
8
6
2
4100 WH
4101 BU/VT
9
K40D Driver Seat Adjuster Memory Module
X328 26
X328 25
X3 19
X3 20
X3 9
X3 10
X328 51
X328 50
-(A45/AUN)
A45/AUN
K56 Serial Data Gateway Module
X1 7
X1 8
X211 71
X211 72
X400 25
X400 24
UET
-UET
4100 WH/GN
4101 BU
K68 Trailer Lamp Control Module
28
27
30
29
X400 48
X400 49

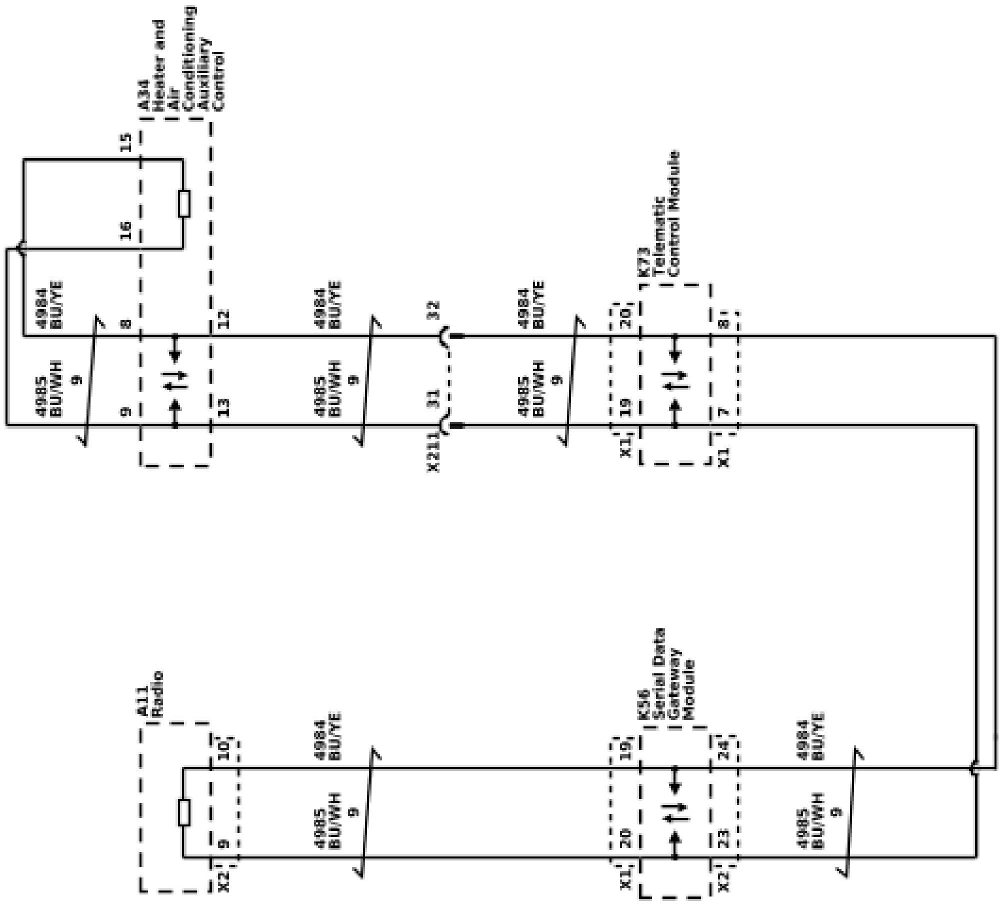
## Data Communication Schematics (CAN 5 (- (5W4 / 9C1)))


A11 Radio
X2 9 10
4985 BU/WH 9
4984 BU/YE
X1 20 19
K56 Serial Data Gateway Module
X2 23 24
K73 Telematic Control Module
X1 7 8
X1 19 20
X211 31 32
X225A 51 50(-AZ3)
X225D 51 50(AZ3)
K183 UHF Short Range Low Energy Remote Control Access Transceiver
6 7 16 17
-(BOR/BOY)
BOR/BOY
T22 Wireless Accessory Charging Module
6 5 4 3
-K7A
K7A
A34 Heater and Air Conditioning Auxiliary Control
13 12 9 8 16 15
UQF
UQS
X225A 39 38
-UW9
UW9
K299R Audio/Video Interface Rear Module
X1 3 4
X1 13 14
X4 16 8
T3 Audio Amplifier
LOC
DESC

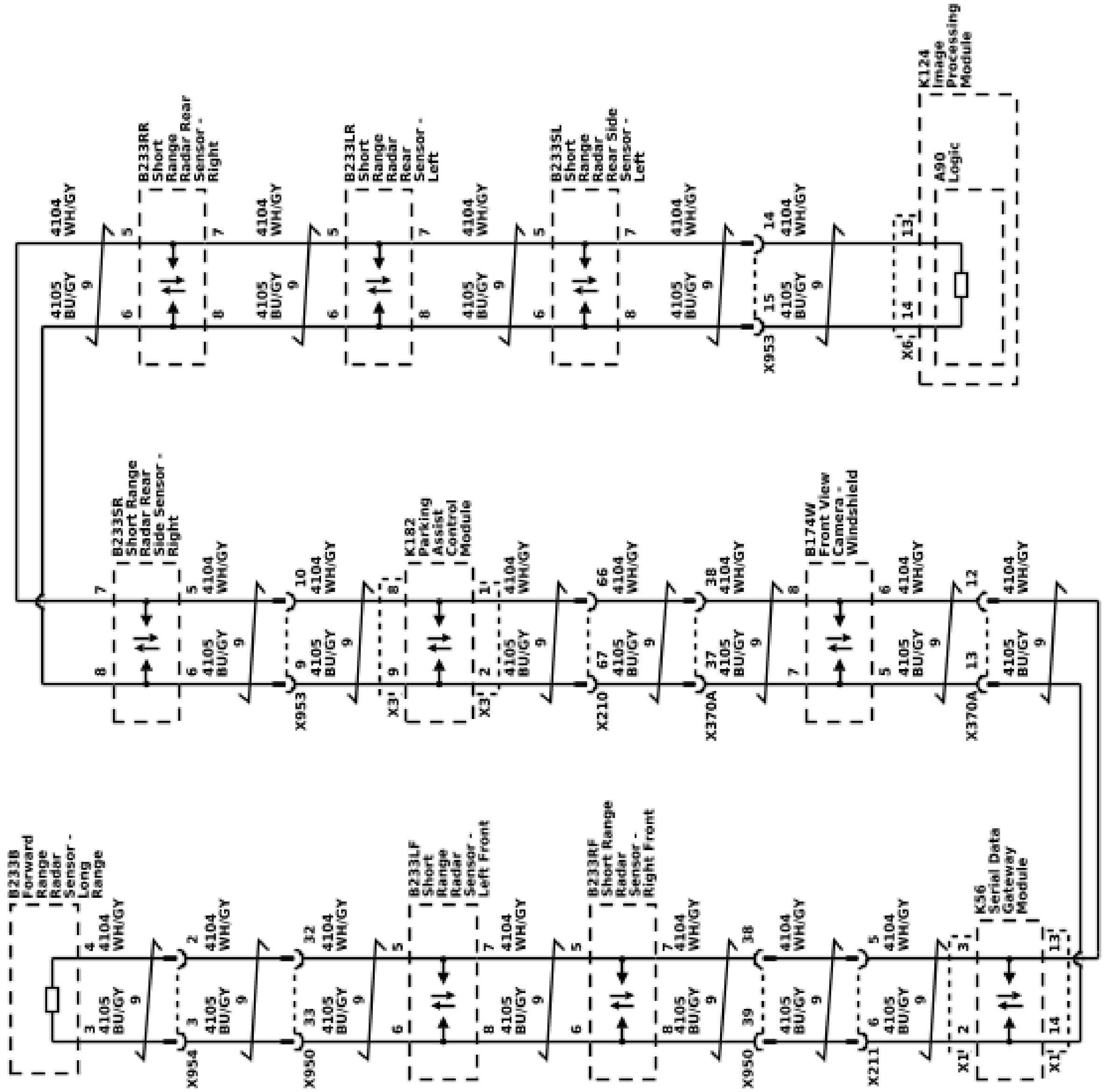
6885586

## Data Communication Schematics (CAN 5 (5W4 / 9C1))

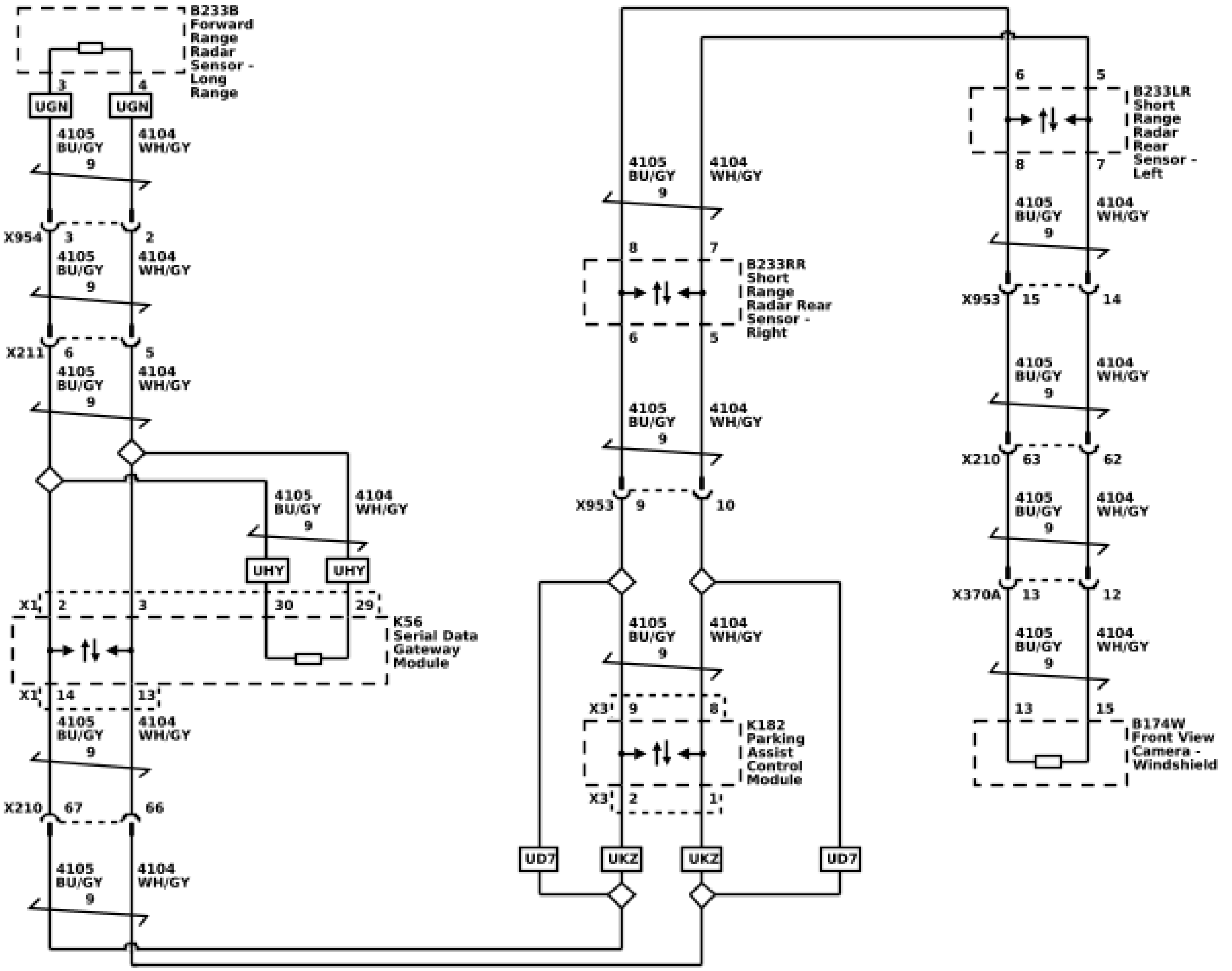
6885587


A34
Heater and Air Conditioning Auxiliary Control
15
16
4984 BU/YE
4985 BU/WH 9
8
9
12
13
4984 BU/YE
4985 BU/WH 9
32
31
X211
4984 BU/YE
4985 BU/WH 9
K73
Telematic Control Module
20
19
X1
8
7
X1
A11
Radio
10
9
X2
4984 BU/YE
4985 BU/WH 9
K56
Serial Data Gateway Module
19
20
X1
24
23
X2
4984 BU/YE
4985 BU/WH 9

## Data Communication Schematics (CAN 8 (UKL))

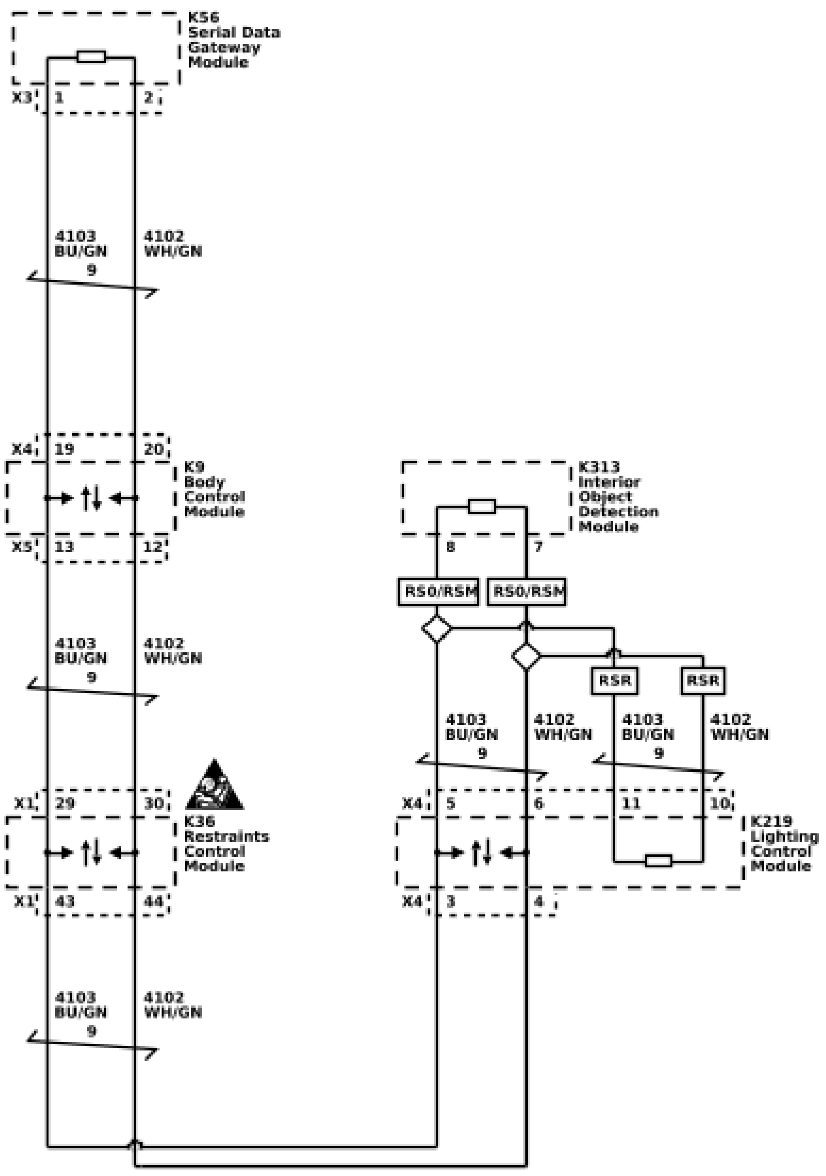

6885588
B233B Forward Range Radar Sensor - Long Range
B233LF Short Range Radar Sensor - Left Front
B233RF Short Range Radar Sensor - Right Front
K56 Serial Data Gateway Module
B233SR Short Range Radar Rear Side Sensor - Right
K182 Parking Assist Control Module
B174W Front View Camera - Windshield
B233RR Short Range Radar Rear Sensor - Right
B233LR Short Range Radar Rear Sensor - Left
B233SL Short Range Radar Rear Side Sensor - Left
K124 Image Processing Module
A90 Logic
4104 WH/GY
4105 BU/GY
9
X954
X950
X211
X1
X953
X3
X210
X370A
X6

## Data Communication Schematics (CAN 8 ((UGN / UHY) - UKL))


B233B
Forward
Range
Radar
Sensor -
Long
Range
3
4
UGN
UGN
4105
BU/GY
9
4104
WH/GY
X954
3
2
X211
6
5
4105
BU/GY
9
4104
WH/GY
UHY
UHY
X1
2
3
30
29
K56
Serial Data
Gateway
Module
X1
14
13
X210
67
66
4105
BU/GY
9
4104
WH/GY
8
7
B233RR
Short
Range
Radar Rear
Sensor -
Right
6
5
X953
9
10
X3
9
8
K182
Parking
Assist
Control
Module
X3
2
1
UD7
UKZ
UKZ
UD7
6
5
B233LR
Short
Range
Radar
Rear
Sensor -
Left
8
7
X953
15
14
X210
63
62
X370A
13
12
13
15
B174W
Front View
Camera -
Windshield

6885589

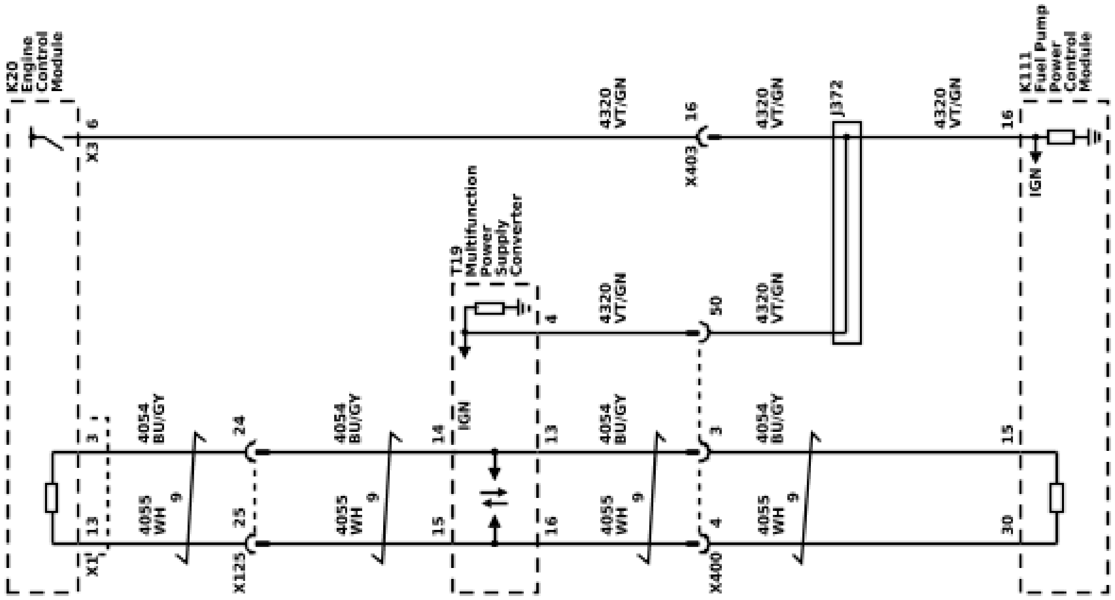
## Data Communication Schematics (CAN 9)


K56
Serial Data
Gateway
Module
X3
1
2
4103
BU/GN
9
4102
WH/GN
X4
19
20
K9
Body
Control
Module
X5
13
12
4103
BU/GN
9
4102
WH/GN
X1
29
30
K36
Restraints
Control
Module
X1
43
44
4103
BU/GN
9
4102
WH/GN
K313
Interior
Object
Detection
Module
8
7
RS0/RSM
RS0/RSM
RSR
RSR
4103
BU/GN
9
4102
WH/GN
4103
BU/GN
9
4102
WH/GN
X4
5
6
11
10
K219
Lighting
Control
Module
X4
3
4

6885590

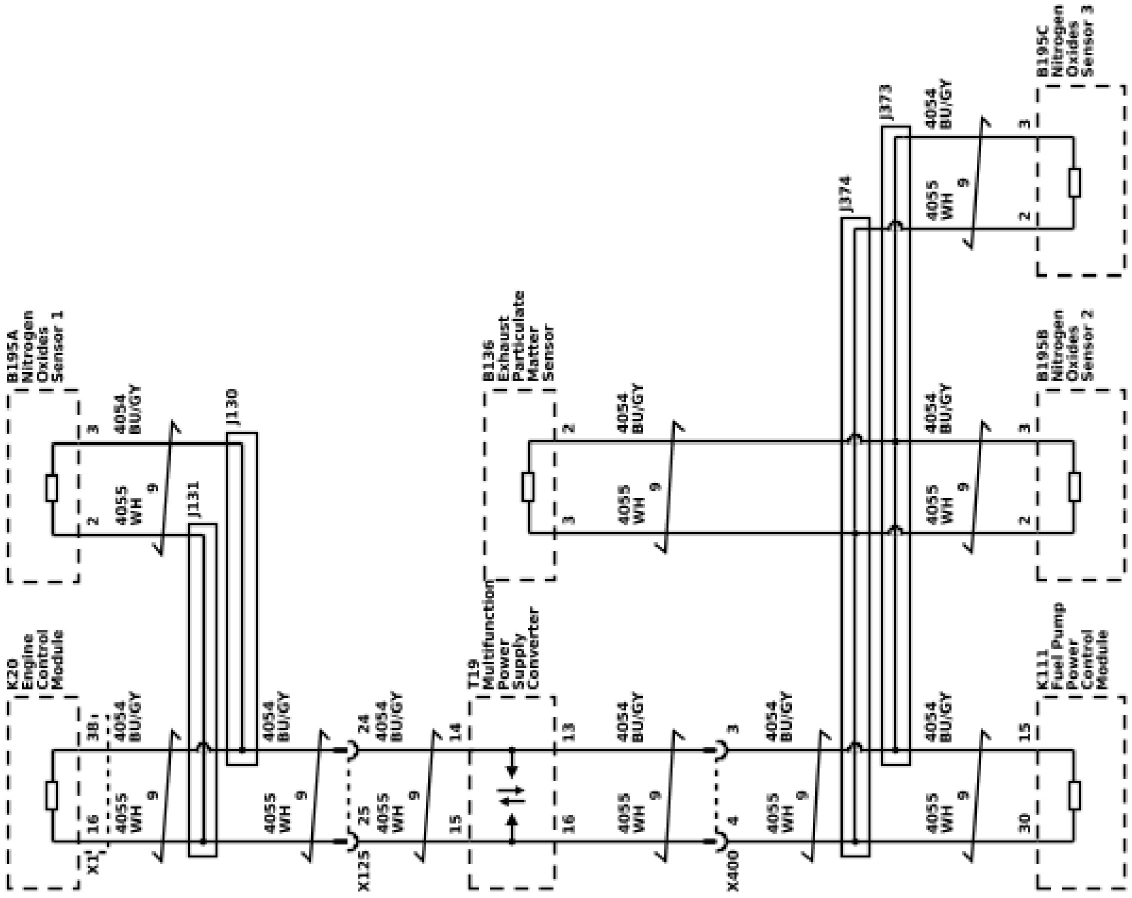
## Data Communication Schematics (Powertrain and Enable CAN (L84 / L87))

6885591

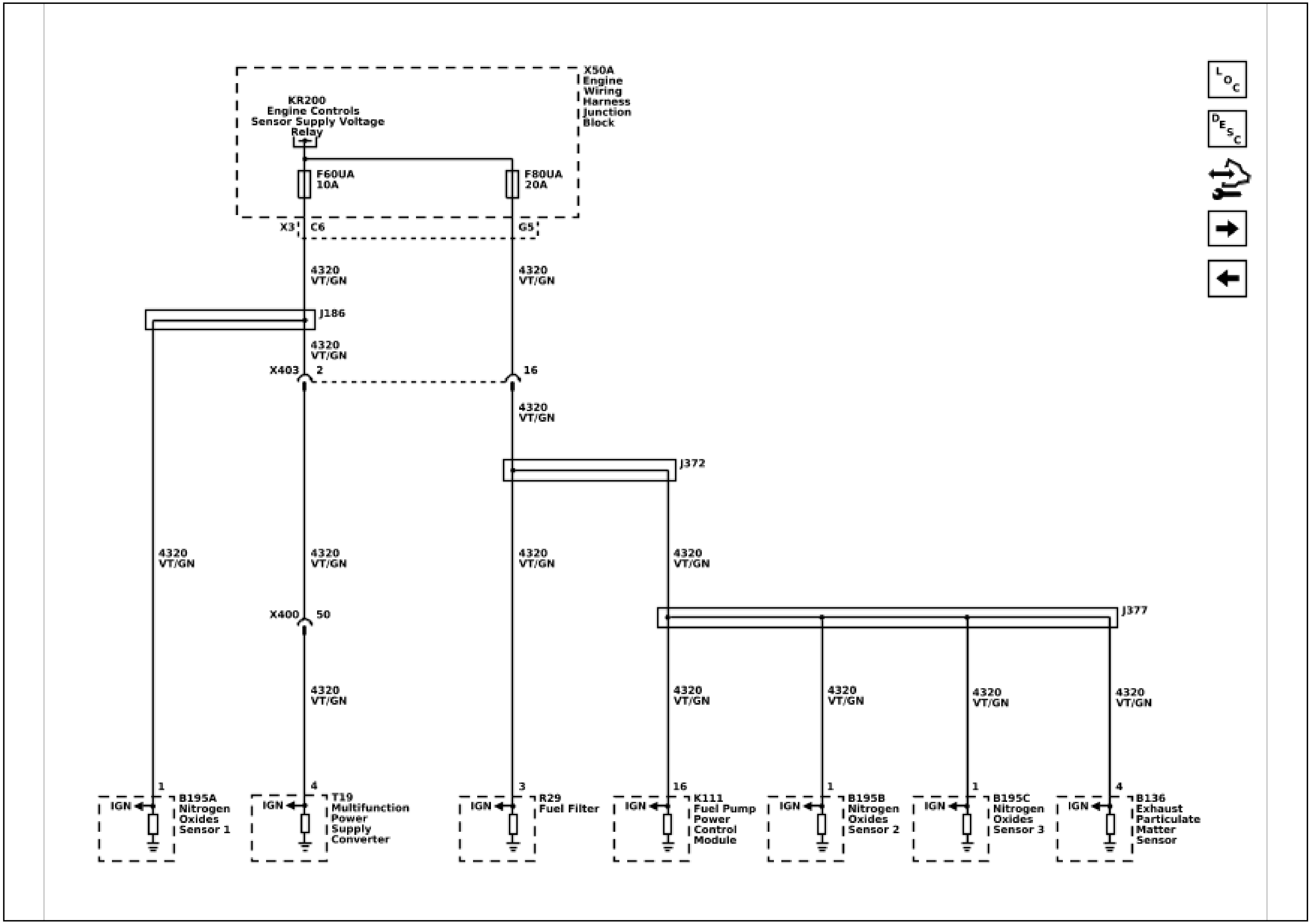

K20 Engine Control Module
X3 6
4320 VT/GN
X403 16
4320 VT/GN
J372
4320 VT/GN
16
K111 Fuel Pump Power Control Module
IGN
T19 Multifunction Power Supply Converter
4
4320 VT/GN
50
4320 VT/GN
X1 3 13
4054 BU/GY
4055 WH
9
X125 24 25
4054 BU/GY
4055 WH
9
14 15
IGN
13 16
4054 BU/GY
4055 WH
9
X400 3 4
4054 BU/GY
4055 WH
9
15 30

6885592

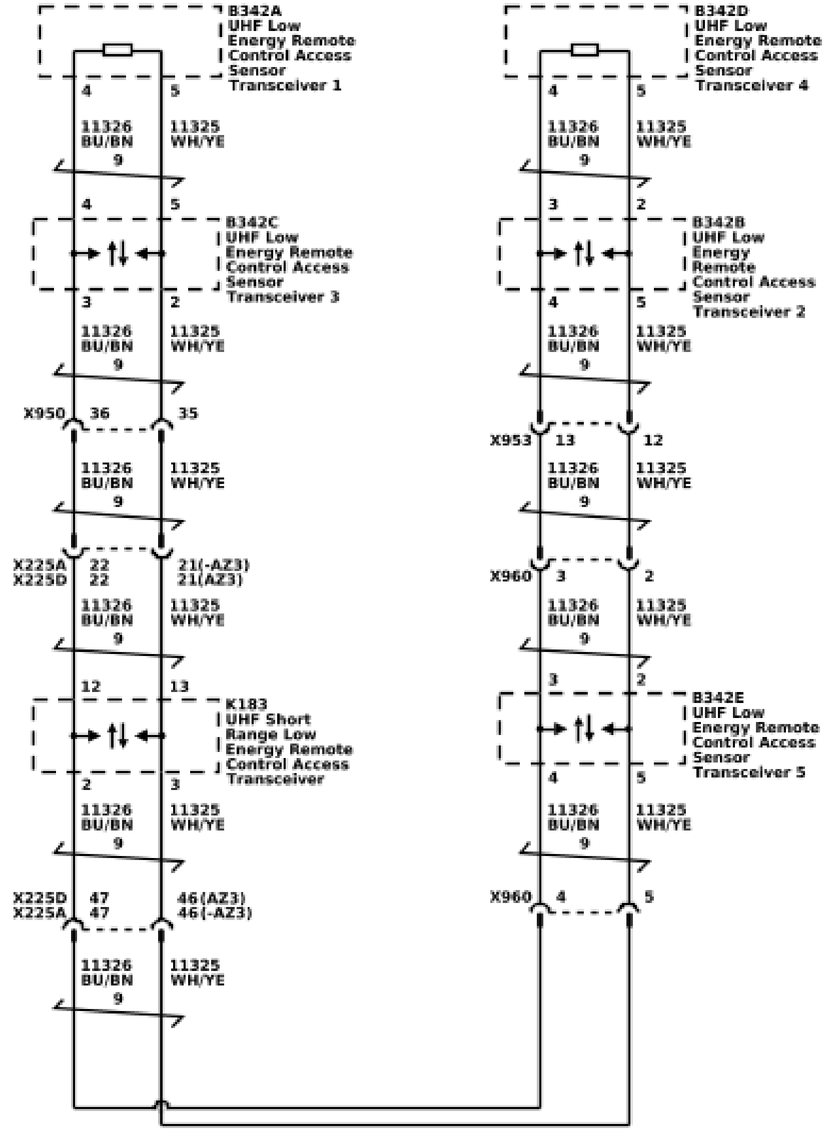
## Data Communication Schematics (Powertrain CAN (LZ0))


K20 Engine Control Module
X1
16
38
4055 WH
4054 BU/GY
9
B195A Nitrogen Oxides Sensor 1
2
3
J131
J130
X125
25
24
T19 Multifunction Power Supply Converter
15
14
16
13
B136 Exhaust Particulate Matter Sensor
3
2
X400
4
3
J374
J373
K111 Fuel Pump Power Control Module
30
15
B195B Nitrogen Oxides Sensor 2
B195C Nitrogen Oxides Sensor 3

## Data Communication Schematics (Powertrain CAN Enable (LZ0))


X50A Engine Wiring Harness Junction Block
KR200 Engine Controls Sensor Supply Voltage Relay
F60UA 10A
F80UA 20A
X3
C6
G5
4320 VT/GN
J186
X403
2
16
J372
J377
X400
50
IGN
1
B195A Nitrogen Oxides Sensor 1
4
T19 Multifunction Power Supply Converter
3
R29 Fuel Filter
16
K111 Fuel Pump Power Control Module
1
B195B Nitrogen Oxides Sensor 2
1
B195C Nitrogen Oxides Sensor 3
4
B136 Exhaust Particulate Matter Sensor
6885593

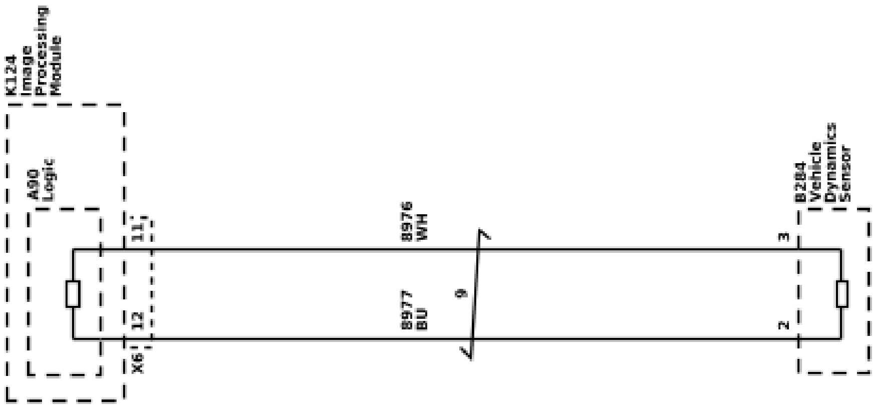
## Data Communication Schematics (Virtual Key CAN (BOR / BOY))


B342A
UHF Low
Energy Remote
Control Access
Sensor
Transceiver 1
B342C
UHF Low
Energy Remote
Control Access
Sensor
Transceiver 3
K183
UHF Short
Range Low
Energy Remote
Control Access
Transceiver
B342D
UHF Low
Energy Remote
Control Access
Sensor
Transceiver 4
B342B
UHF Low
Energy
Remote
Control Access
Sensor
Transceiver 2
B342E
UHF Low
Energy Remote
Control Access
Sensor
Transceiver 5
11326
BU/BN
9
11325
WH/YE
X950 36 35
X225A 22 21(-AZ3)
X225D 22 21(AZ3)
12 13
2 3
X225D 47 46(AZ3)
X225A 47 46(-AZ3)
X953 13 12
X960 3 2
X960 4 5

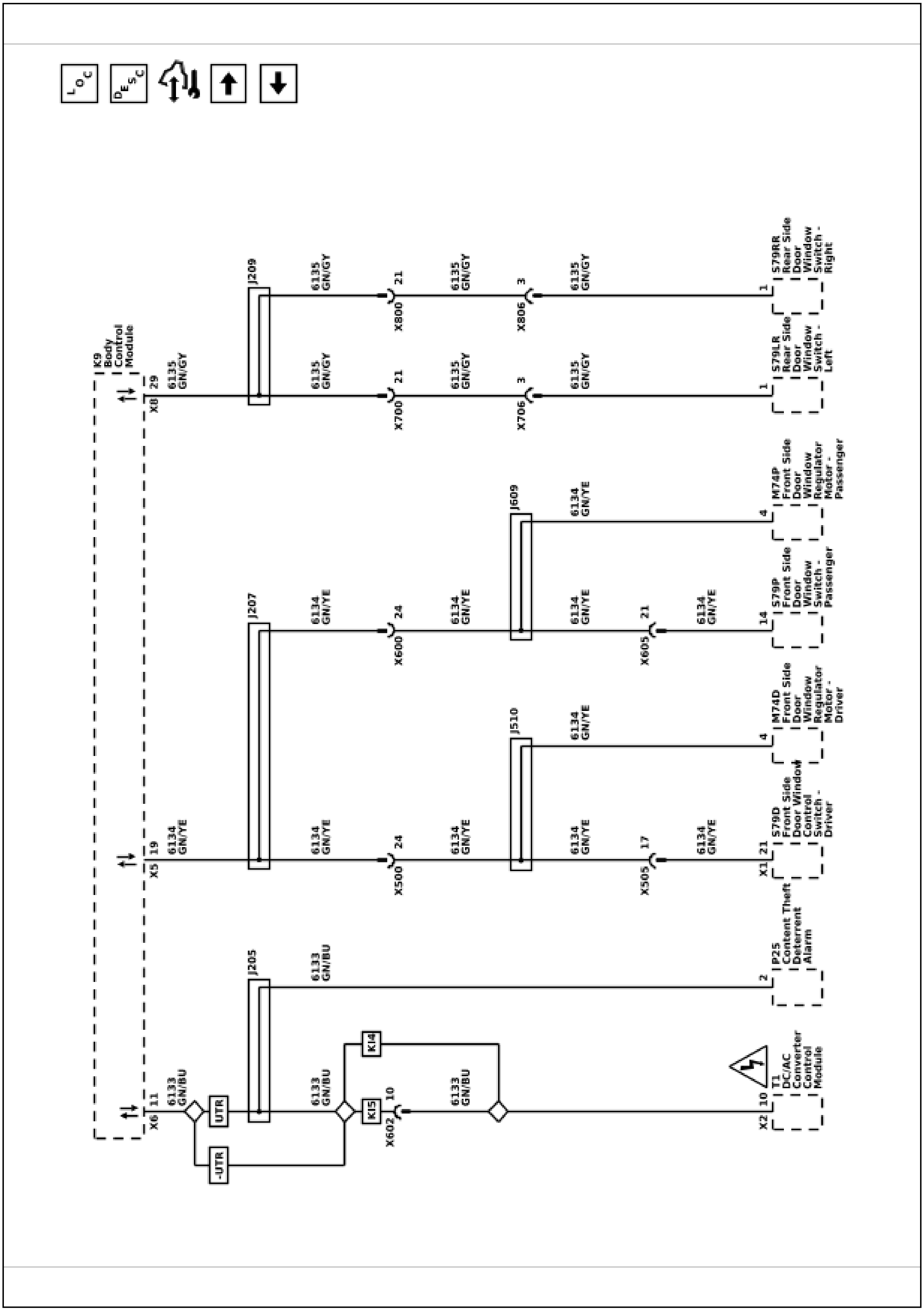
6885594

## Data Communication Schematics (Active Safety CAN (UKL))

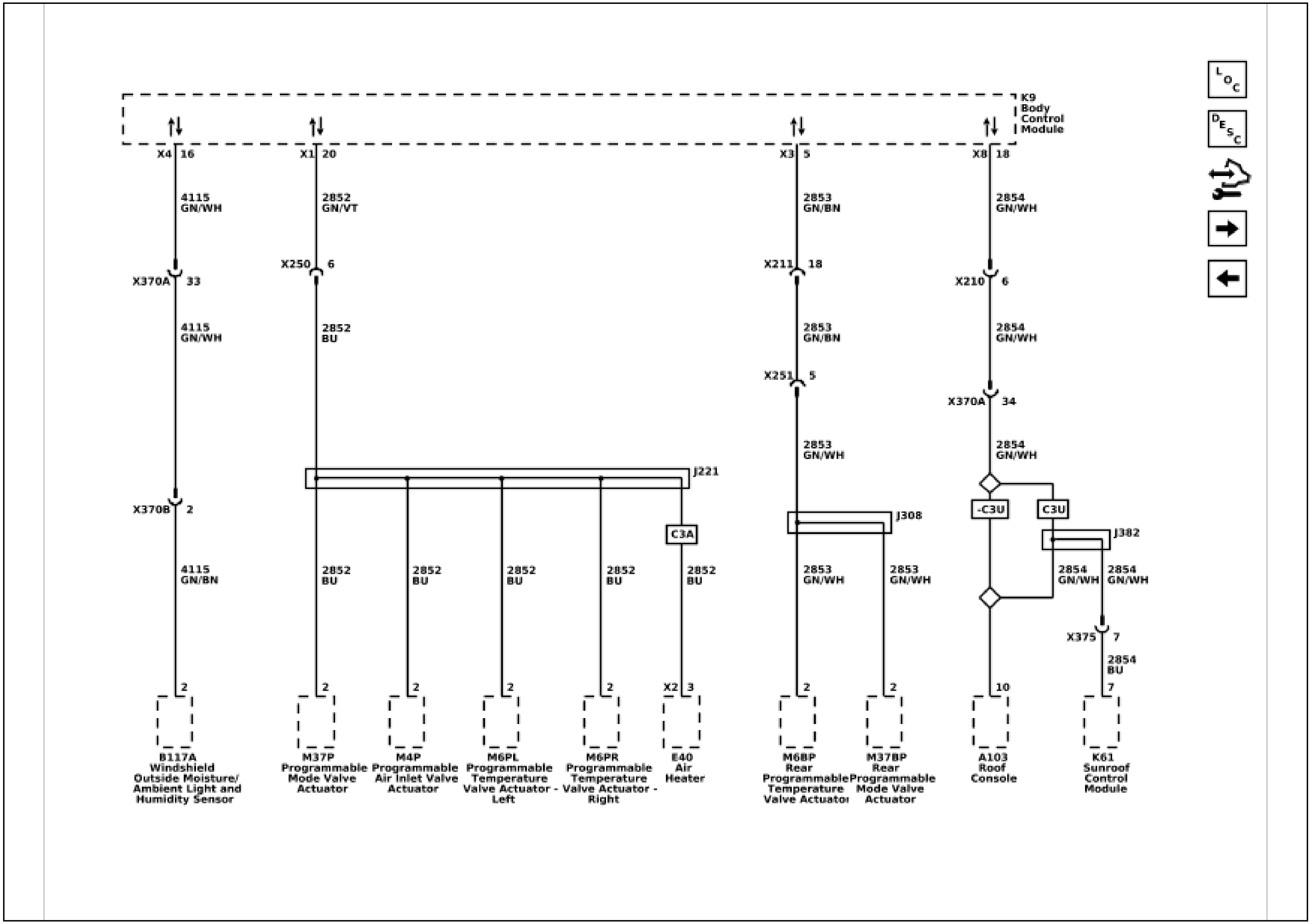
6885595


K124
Image
Processing
Module
A90
Logic
11
12
X6
8976
WH
8977
BU
9
3
2
B284
Vehicle
Dynamics
Sensor

## Data Communication Schematics (Body Control Module Local Interconnect Network - LIN Busses 2, 3, and 4)

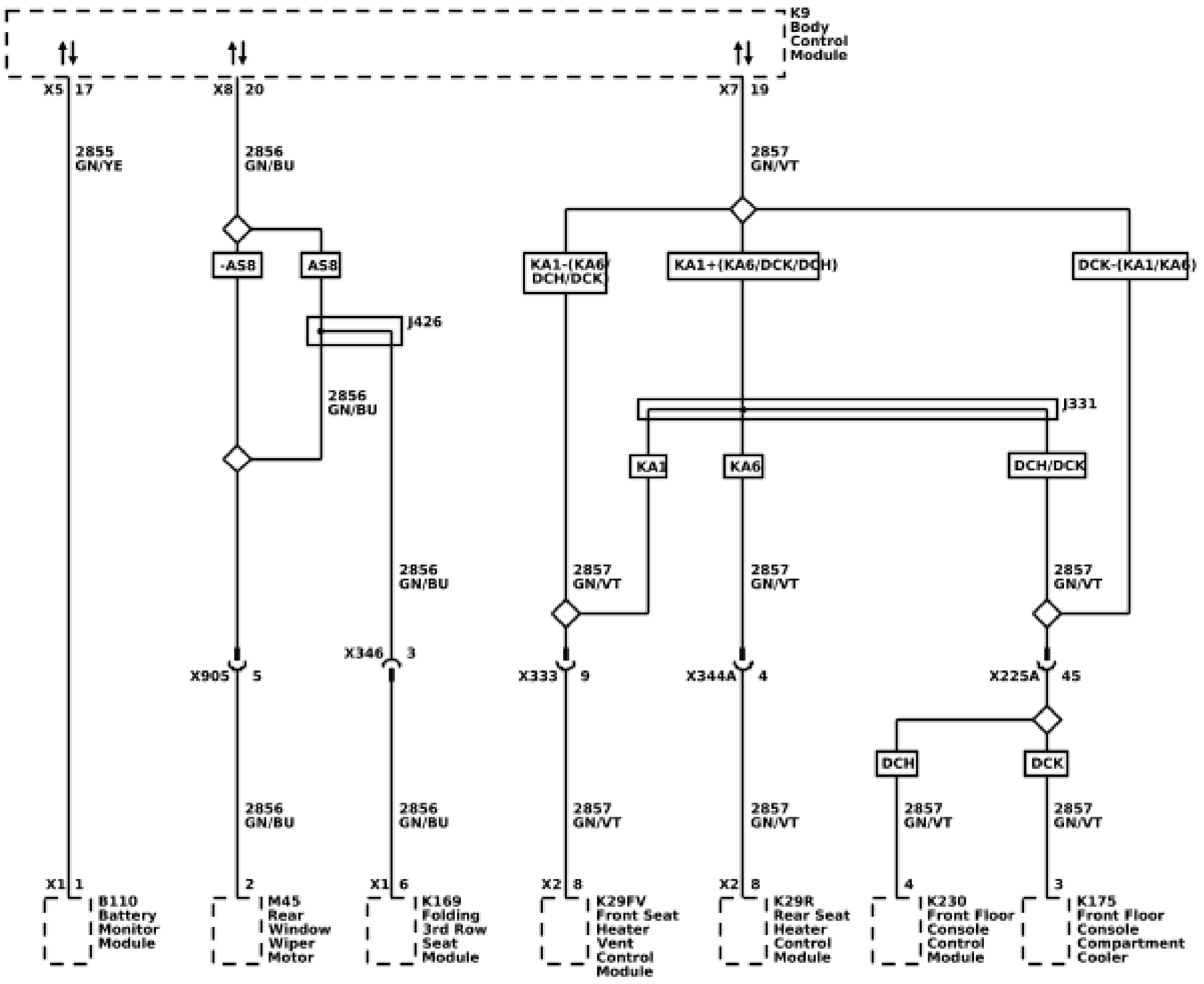

6885596
K9 Body Control Module
X6 11 6133 GN/BU
X5 19 6134 GN/YE
X8 29 6135 GN/GY
UTR
-UTR
KI5
KI4
J205
J207
J209
J510
J609
6133 GN/BU
6134 GN/YE
6135 GN/GY
X602 10
X500 24
X600 24
X700 21
X800 21
X505 17
X605 21
X706 3
X806 3
X2 10 T1 DC/AC Converter Control Module
2 P25 Content Theft Deterrent Alarm
X1 21 S79D Front Side Door Window Control Switch - Driver
4 M74D Front Side Door Window Regulator Motor - Driver
14 S79P Front Side Door Window Switch - Passenger
4 M74P Front Side Door Window Regulator Motor - Passenger
1 S79LR Rear Side Door Window Switch - Left
1 S79RR Rear Side Door Window Switch - Right

## Data Communication Schematics (Body Control Module Local Interconnect Network - LIN Busses 5, 6, 7, and 8)


K9
Body
Control
Module
X4 16
4115
GN/WH
X370A 33
4115
GN/WH
X370B 2
4115
GN/BN
2
B117A
Windshield
Outside Moisture/
Ambient Light and
Humidity Sensor
X1 20
2852
GN/VT
X250 6
2852
BU
J221
2852
BU
2
M37P
Programmable
Mode Valve
Actuator
2852
BU
2
M4P
Programmable
Air Inlet Valve
Actuator
2852
BU
2
M6PL
Programmable
Temperature
Valve Actuator -
Left
2852
BU
2
M6PR
Programmable
Temperature
Valve Actuator -
Right
C3A
2852
BU
X2 3
E40
Air
Heater
X3 5
2853
GN/BN
X211 18
2853
GN/BN
X251 5
2853
GN/WH
J308
2853
GN/WH
2
M6BP
Rear
Programmable
Temperature
Valve Actuator
2853
GN/WH
2
M37BP
Rear
Programmable
Mode Valve
Actuator
X8 18
2854
GN/WH
X210 6
2854
GN/WH
X370A 34
2854
GN/WH
-C3U
C3U
J382
2854
GN/WH
10
A103
Roof
Console
2854
GN/WH
X375 7
2854
BU
7
K61
Sunroof
Control
Module

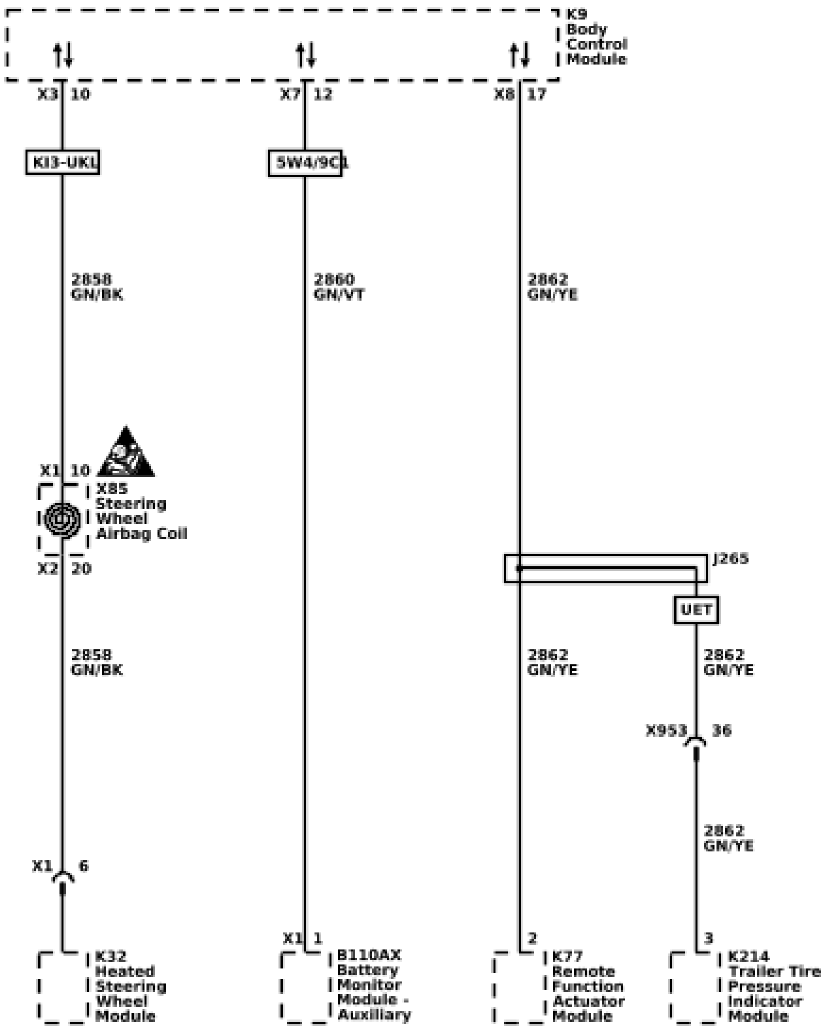
6885597

## Data Communication Schematics (Body Control Module Local Interconnect Network - LIN Busses 9, 10, and 11)


K9 Body Control Module
X5 17
2855 GN/YE
X8 20
2856 GN/BU
X7 19
2857 GN/VT
-AS8
AS8
J426
2856 GN/BU
KA1-(KA6/DCH/DCK)
KA1+(KA6/DCK/DCH)
DCK-(KA1/KA6)
J331
KA1
KA6
DCH/DCK
2857 GN/VT
X905 5
X346 3
X333 9
X344A 4
X225A 45
DCH
DCK
X1 1
B110 Battery Monitor Module
2 M45 Rear Window Wiper Motor
X1 6 K169 Folding 3rd Row Seat Module
X2 8 K29FV Front Seat Heater Vent Control Module
X2 8 K29R Rear Seat Heater Control Module
4 K230 Front Floor Console Control Module
3 K175 Front Floor Console Compartment Cooler

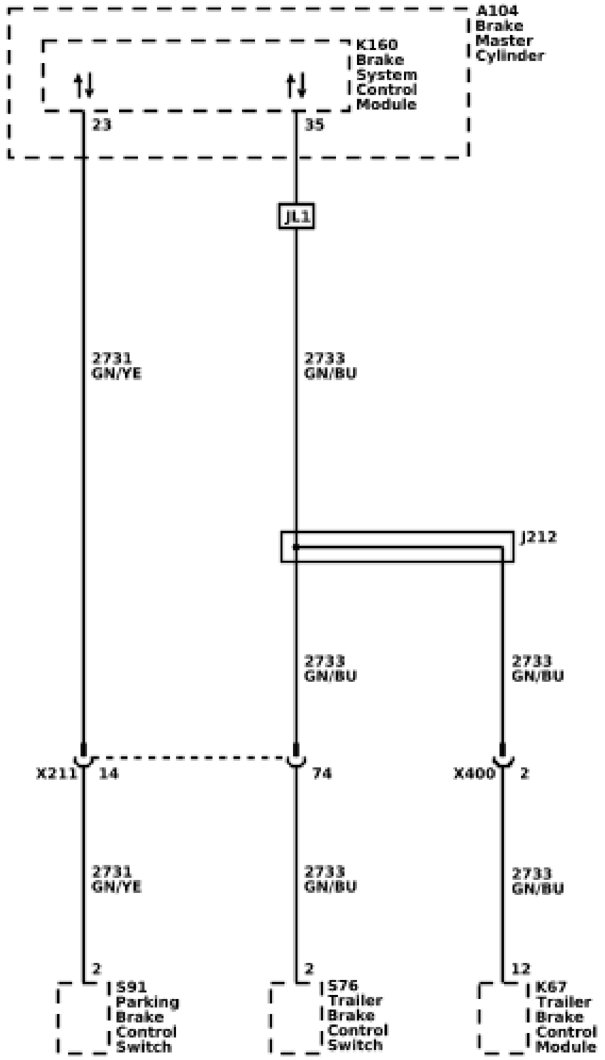
6885598

## Data Communication Schematics (Body Control Module Local Interconnect Network - LIN Busses 12, 14, and 16)


K9
Body
Control
Module
X3 10
X7 12
X8 17
KI3-UKL
5W4/9C1
2858
GN/BK
2860
GN/VT
2862
GN/YE
X1 10
X85
Steering
Wheel
Airbag Coil
X2 20
J265
UET
2858
GN/BK
2862
GN/YE
2862
GN/YE
X953 36
2862
GN/YE
X1 6
X1 1
2
3
K32
Heated
Steering
Wheel
Module
B110AX
Battery
Monitor
Module -
Auxiliary
K77
Remote
Function
Actuator
Module
K214
Trailer Tire
Pressure
Indicator
Module

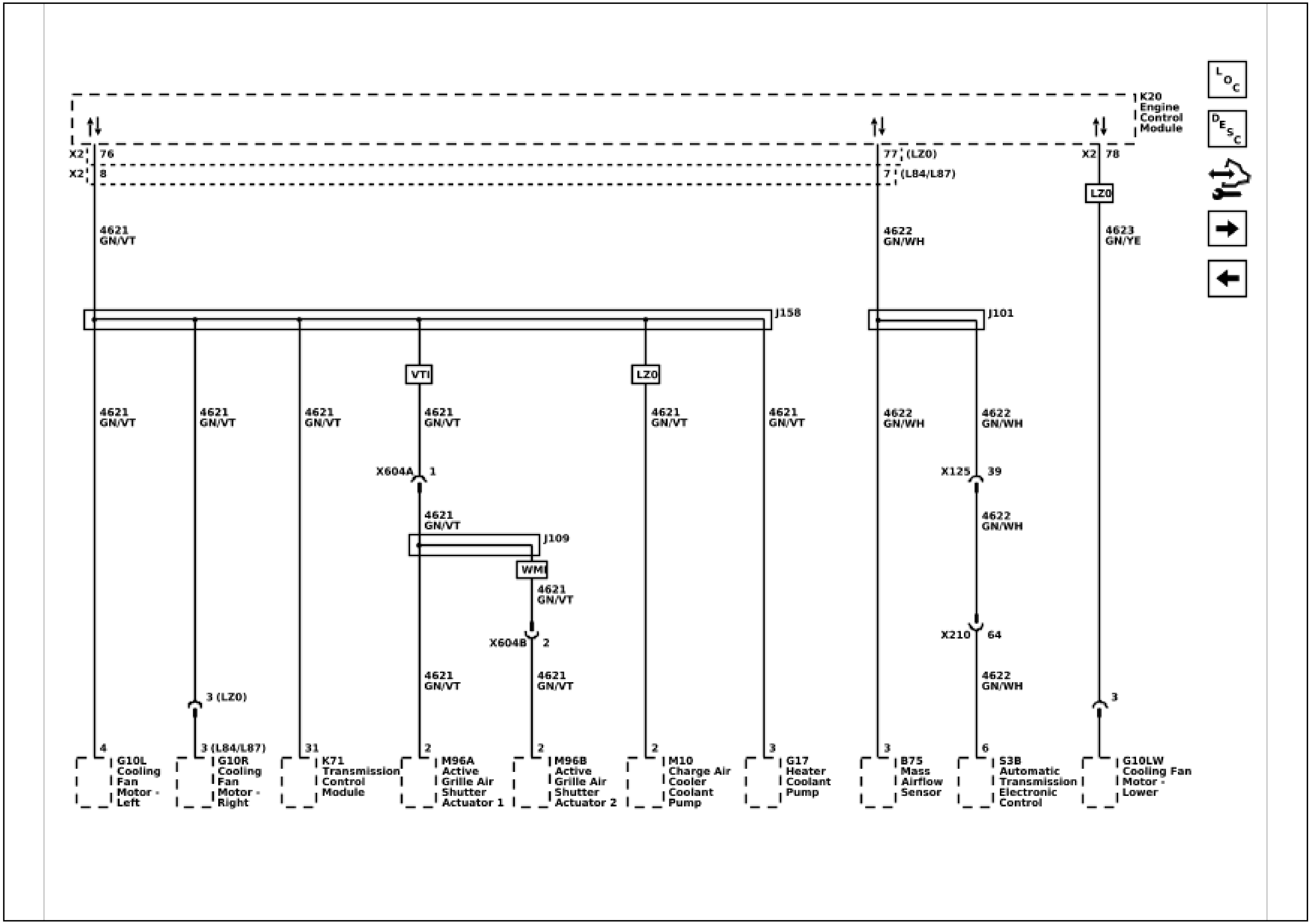
6885599

## Data Communication Schematics (Brake System Control Module Local Interconnect Network - LIN Busses)

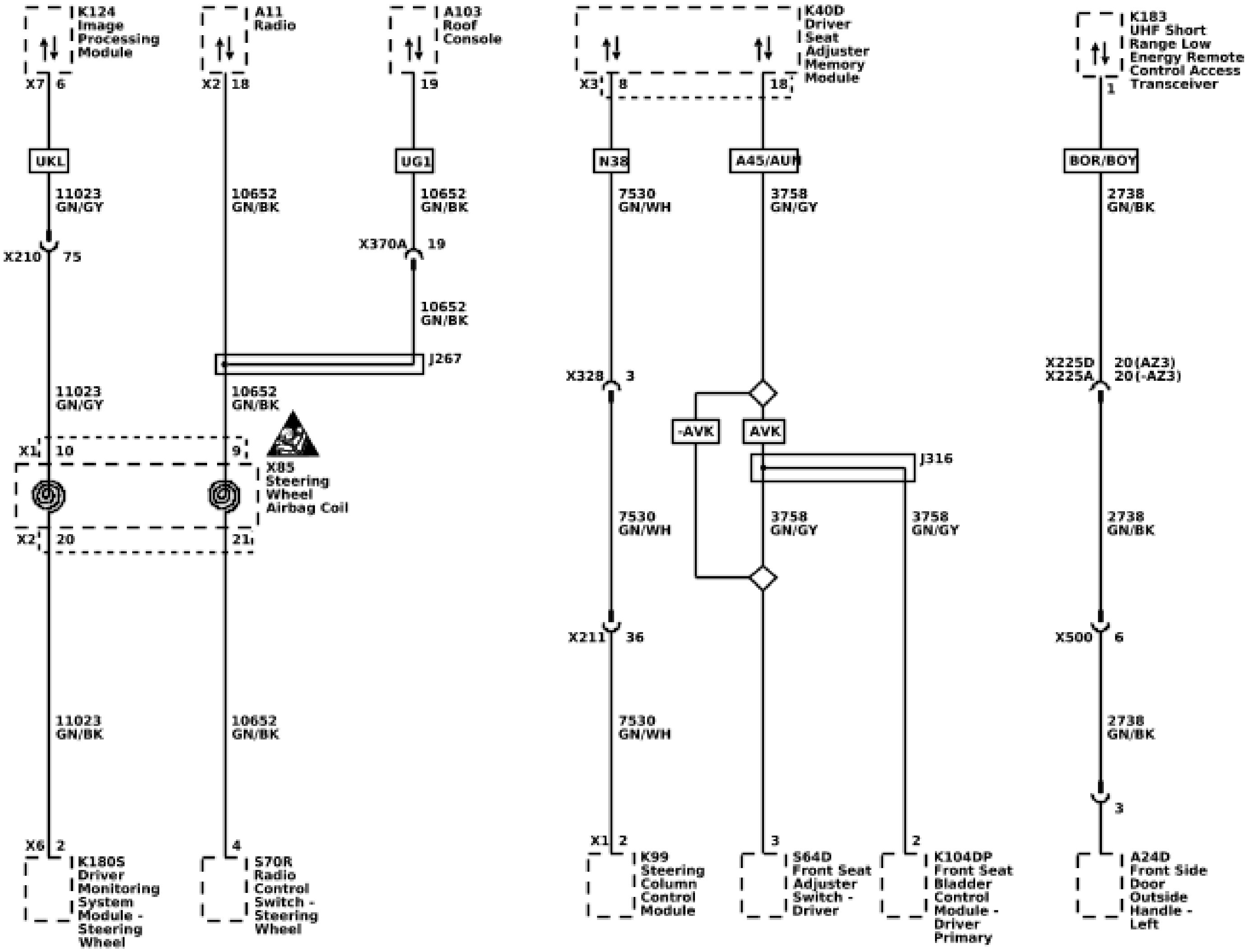

A104
Brake
Master
Cylinder
K160
Brake
System
Control
Module
23
35
JL1
2731
GN/YE
2733
GN/BU
J212
2733
GN/BU
2733
GN/BU
X211
14
74
X400
2
2731
GN/YE
2733
GN/BU
2733
GN/BU
2
2
12
S91
Parking
Brake
Control
Switch
S76
Trailer
Brake
Control
Switch
K67
Trailer
Brake
Control
Module

6885600

## Data Communication Schematics (Engine Control Module Local Interconnect Network - LIN Busses)

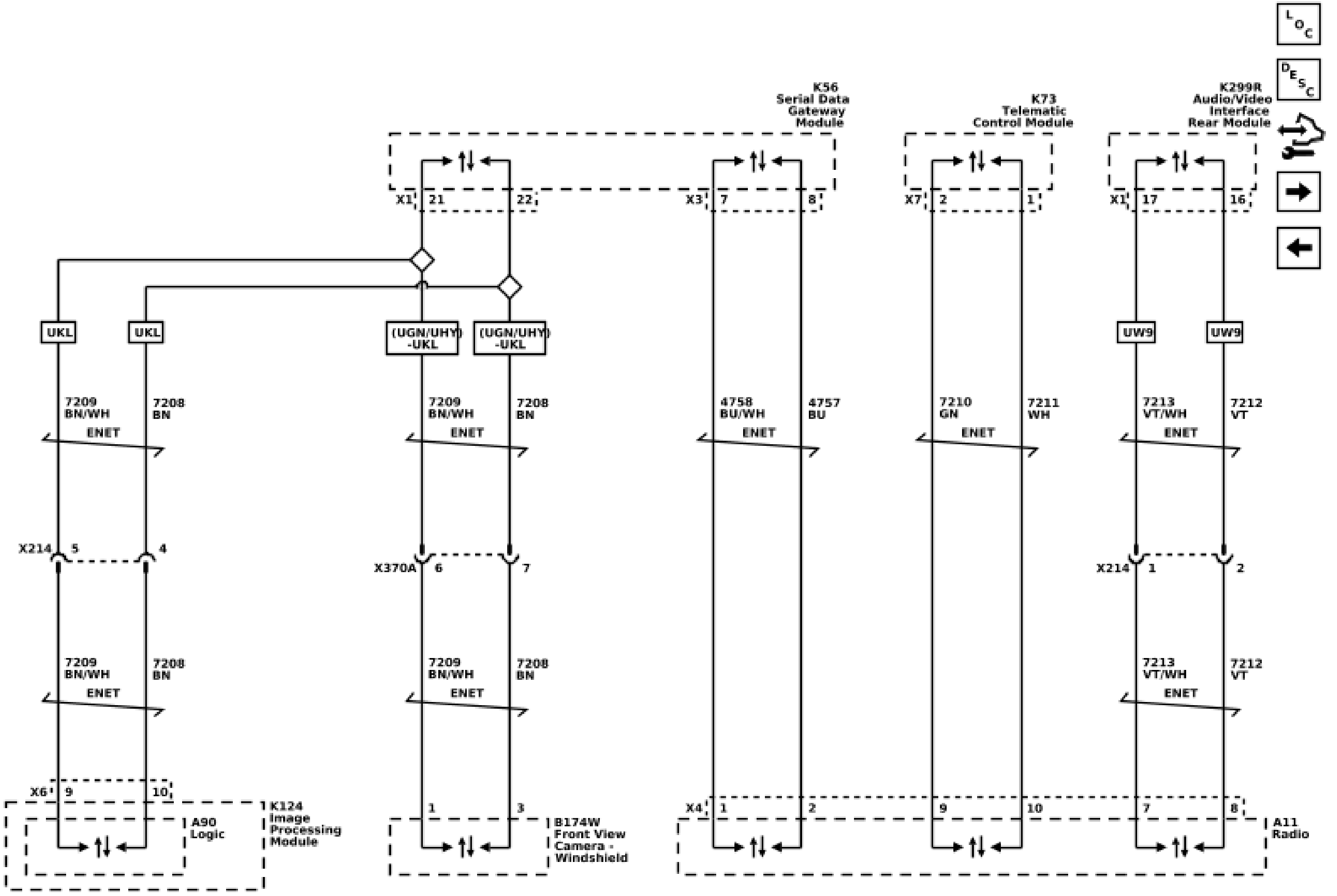

K20 Engine Control Module
X2 76
X2 8
77 (LZ0)
7 (L84/L87)
X2 78
LZ0
4621 GN/VT
4622 GN/WH
4623 GN/YE
J158
J101
VTI
LZ0
4621 GN/VT
4621 GN/VT
4621 GN/VT
4621 GN/VT
4621 GN/VT
4621 GN/VT
4622 GN/WH
4622 GN/WH
X604A 1
X125 39
4621 GN/VT
4622 GN/WH
J109
WMI
4621 GN/VT
X604B 2
X210 64
4621 GN/VT
4621 GN/VT
4622 GN/WH
3 (LZ0)
3
4
G10L Cooling Fan Motor - Left
3 (L84/L87)
G10R Cooling Fan Motor - Right
31
K71 Transmission Control Module
2
M96A Active Grille Air Shutter Actuator 1
2
M96B Active Grille Air Shutter Actuator 2
2
M10 Charge Air Cooler Coolant Pump
3
G17 Heater Coolant Pump
3
B75 Mass Airflow Sensor
6
S3B Automatic Transmission Electronic Control
G10LW Cooling Fan Motor - Lower
L O C
D E S C
6885601

## Data Communication Schematics (General Local Interconnect Network - LIN Busses)

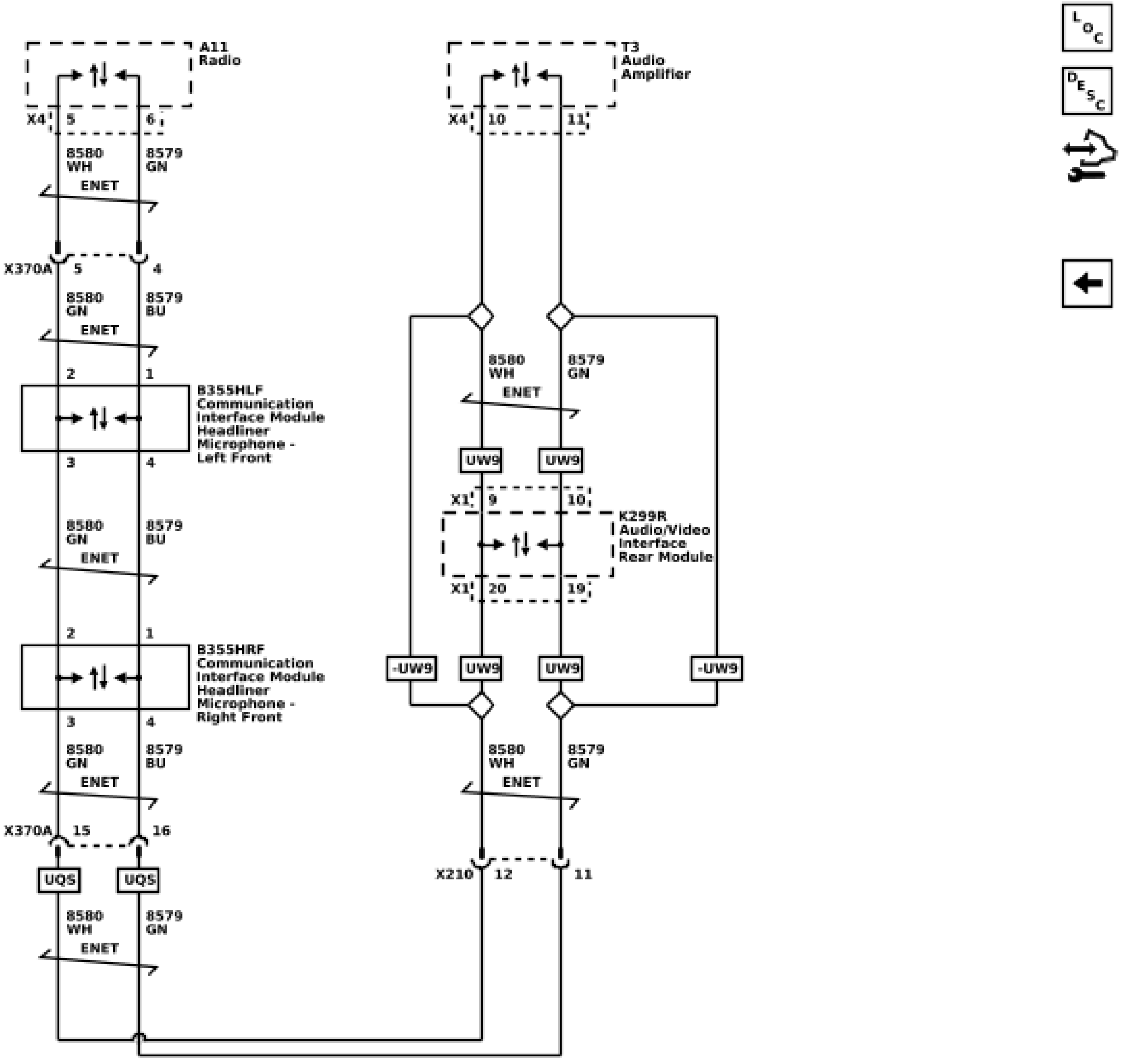

K124
Image
Processing
Module
X7 6
UKL
11023
GN/GY
X210 75
11023
GN/GY
X1 10
X2 20
11023
GN/BK
X6 2
K180S
Driver
Monitoring
System
Module -
Steering
Wheel
A11
Radio
X2 18
10652
GN/BK
J267
10652
GN/BK
9
21
X85
Steering
Wheel
Airbag Coil
10652
GN/BK
4
S70R
Radio
Control
Switch -
Steering
Wheel
A103
Roof
Console
19
UG1
10652
GN/BK
X370A 19
10652
GN/BK
K40D
Driver
Seat
Adjuster
Memory
Module
X3 8
18
N38
7530
GN/WH
X328 3
7530
GN/WH
X211 36
7530
GN/WH
X1 2
K99
Steering
Column
Control
Module
A45/AUH
3758
GN/GY
-AVK
AVK
J316
3758
GN/GY
3758
GN/GY
3
S64D
Front Seat
Adjuster
Switch -
Driver
2
K104DP
Front Seat
Bladder
Control
Module -
Driver
Primary
K183
UHF Short
Range Low
Energy Remote
Control Access
Transceiver
1
BOR/BOY
2738
GN/BK
X225D 20(AZ3)
X225A 20(-AZ3)
2738
GN/BK
X500 6
2738
GN/BK
3
A24D
Front Side
Door
Outside
Handle -
Left

6885602

## Data Communication Schematics (Ethernet Busses)

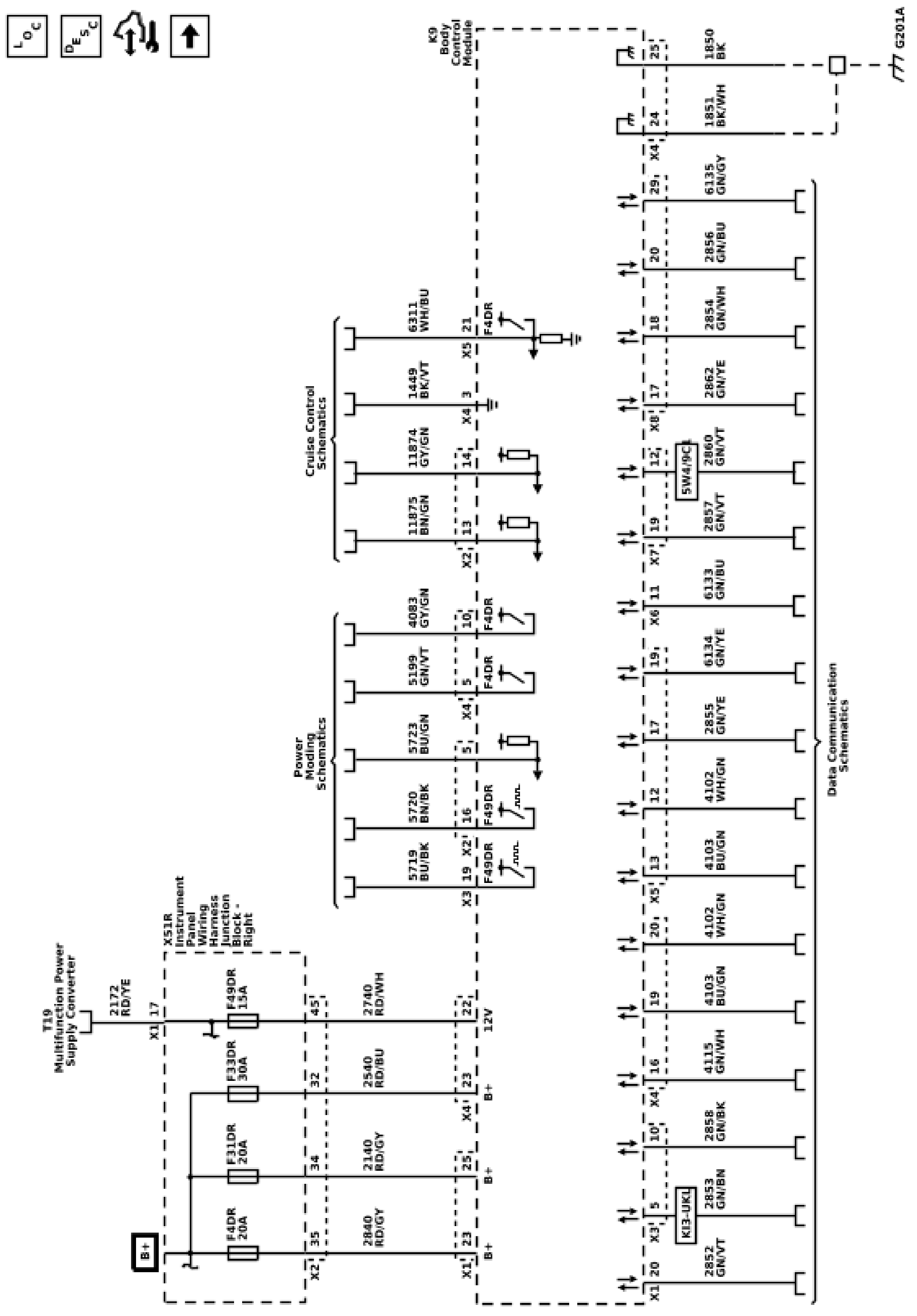

L O C
D E S C
K56 Serial Data Gateway Module
K73 Telematic Control Module
K299R Audio/Video Interface Rear Module
X1 21 22
X3 7 8
X7 2 1
X1 17 16
UKL
UKL
(UGN/UHY) -UKL
(UGN/UHY) -UKL
UW9
UW9
7209 BN/WH
7208 BN
ENET
4758 BU/WH
4757 BU
7210 GN
7211 WH
7213 VT/WH
7212 VT
X214 5 4
X370A 6 7
X214 1 2
X6 9 10
A90 Logic
K124 Image Processing Module
1 3
B174W Front View Camera - Windshield
X4 1 2
9 10
7 8
A11 Radio
6885603

## Data Communication Schematics (Automotive Audio Bus)

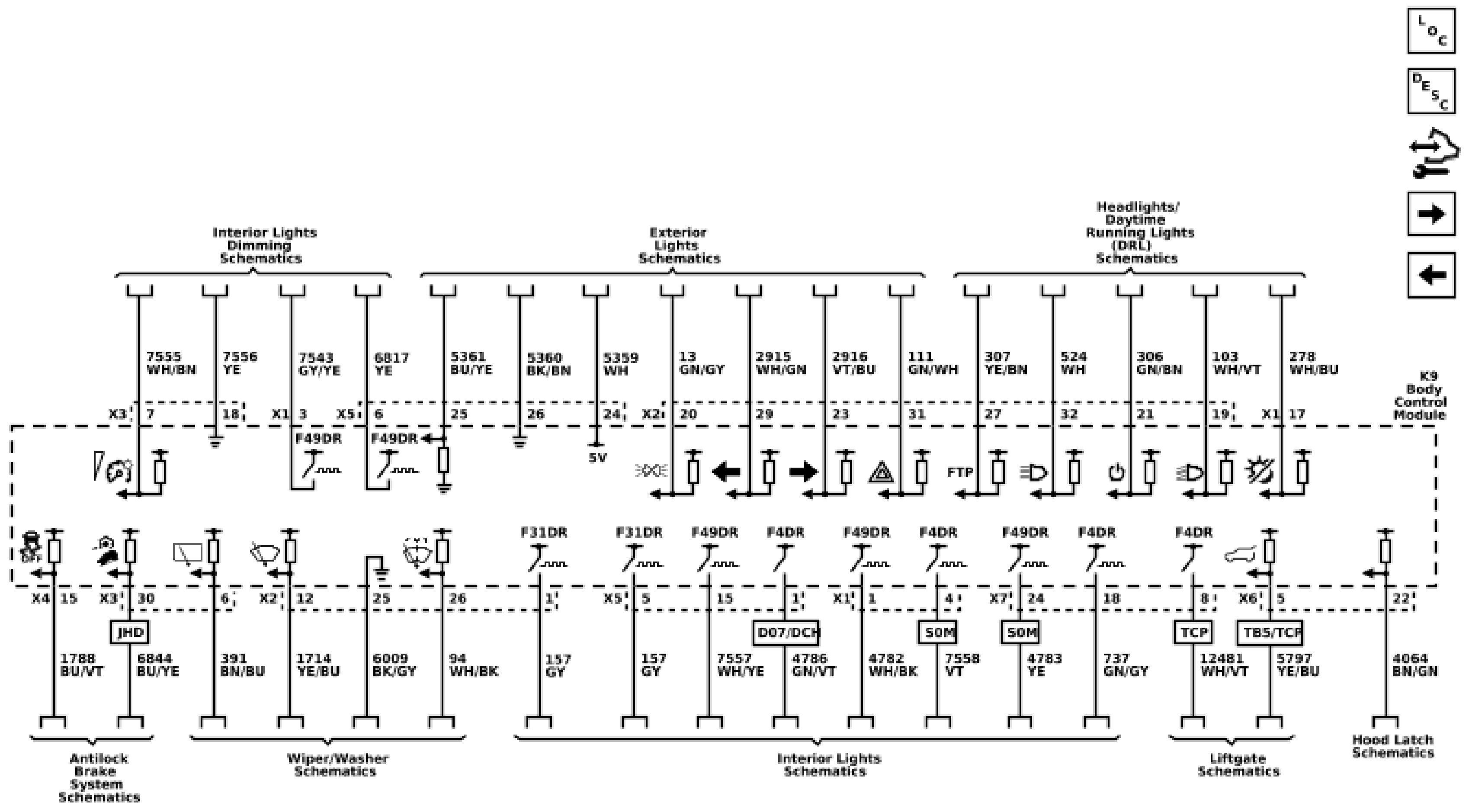

A11
Radio
X4 5 6
8580 WH
8579 GN
ENET
X370A 5 4
8580 GN
8579 BU
ENET
2 1
B355HLF
Communication Interface Module Headliner Microphone - Left Front
3 4
8580 GN
8579 BU
ENET
2 1
B355HRF
Communication Interface Module Headliner Microphone - Right Front
3 4
8580 GN
8579 BU
ENET
X370A 15 16
UQS
UQS
8580 WH
8579 GN
ENET
T3
Audio Amplifier
X4 10 11
8580 WH
8579 GN
ENET
UW9
UW9
X1 9 10
K299R
Audio/Video Interface Rear Module
X1 20 19
-UW9
UW9
UW9
-UW9
8580 WH
8579 GN
ENET
X210 12 11

6885604

## Body Control System Schematics (Power, Ground, Serial Data, and Subsystem References 1 of 4)

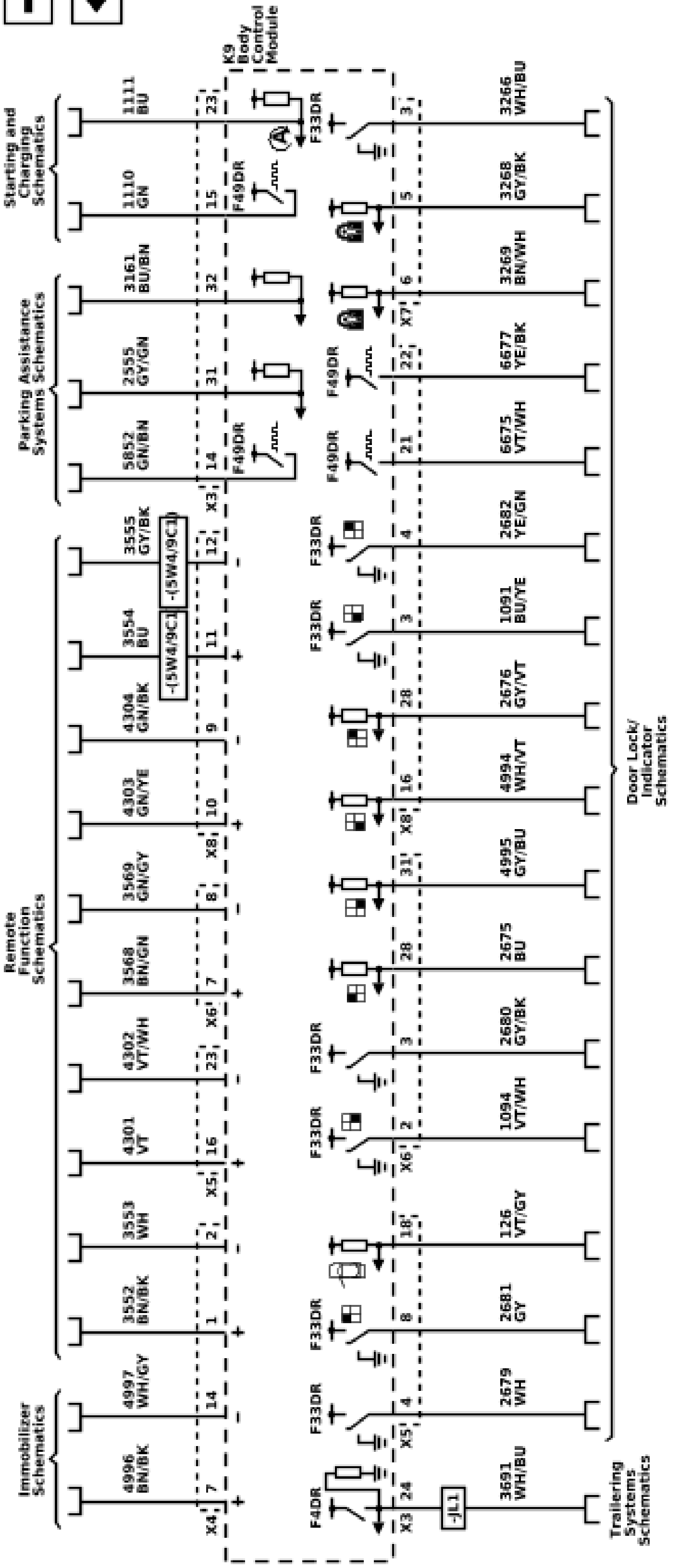

6885605
LOC
DESC
T19 Multifunction Power Supply Converter
2172 RD/YE
X1 17
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
F4DR 20A
F31DR 20A
F33DR 30A
F49DR 15A
X2 35
34
32
45
2840 RD/GY
2140 RD/GY
2540 RD/BU
2740 RD/WH
X1 23 B+
25 B+
X4 23 B+
22 12V
K9 Body Control Module
Power Moding Schematics
5719 BU/BK
5720 BN/BK
5723 BU/GN
5199 GN/VT
4083 GY/GN
X3 19 F49DR
X2 16 F49DR
5
X4 5 F4DR
10 F4DR
Cruise Control Schematics
11875 BN/GN
11874 GY/GN
1449 BK/VT
6311 WH/BU
X2 13
14
X4 3
X5 21 F4DR
X1 20
X3 5
X4 10
16
19
X5 20
13
12
17
X6 19
11
X7 19
12
X8 17
18
20
29
X4 24
25
2852 GN/VT
2853 GN/BN
2858 GN/BK
4115 GN/WH
4103 BU/GN
4102 WH/GN
4103 BU/GN
4102 WH/GN
2855 GN/YE
6134 GN/YE
6133 GN/BU
2857 GN/VT
2860 GN/VT
2862 GN/YE
2854 GN/WH
2856 GN/BU
6135 GN/GY
1851 BK/WH
1850 BK
KI3-UKL
5W4/9C
G201A
Data Communication Schematics

## Body Control System Schematics (Subsystem References 2 of 4)

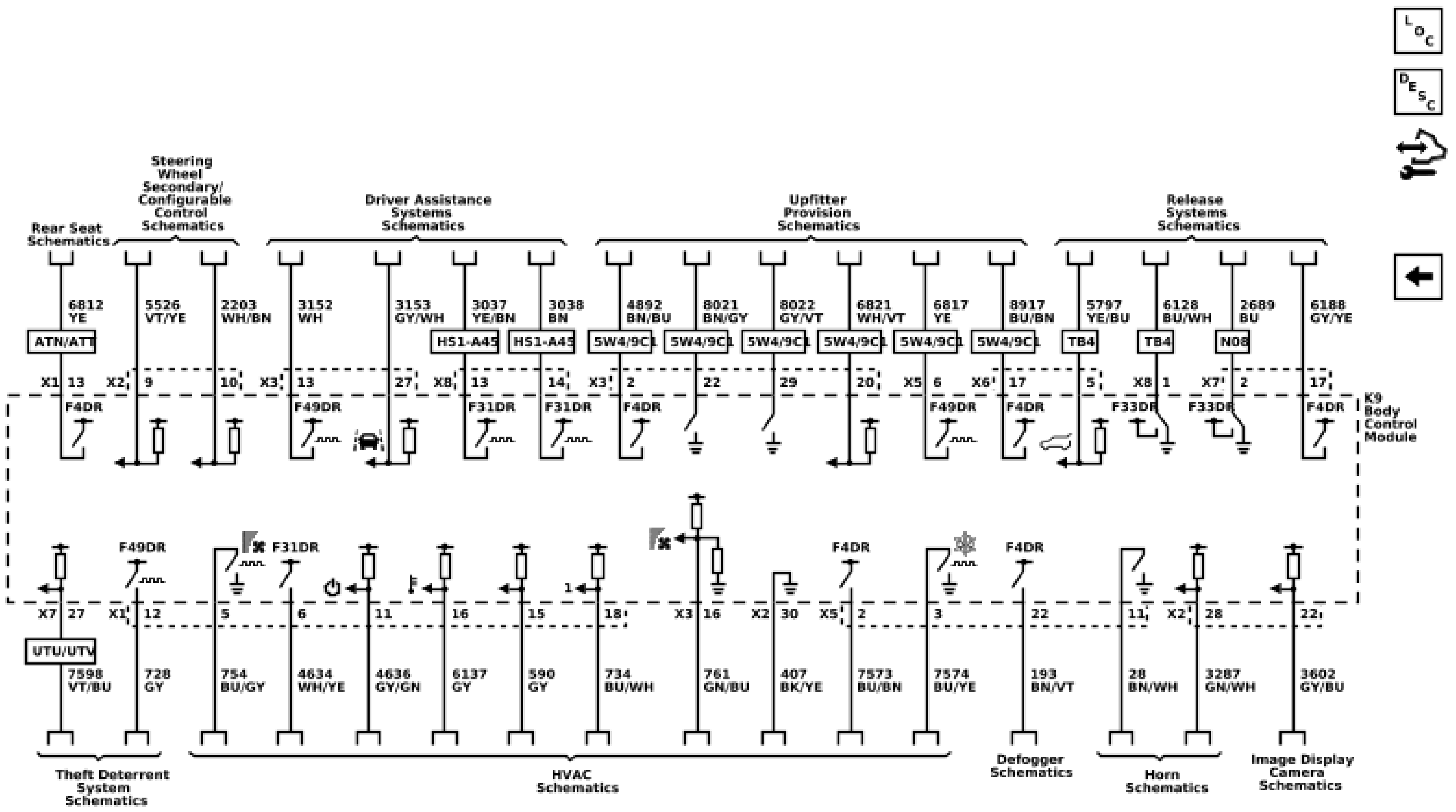

Interior Lights Dimming Schematics
Exterior Lights Schematics
Headlights/ Daytime Running Lights (DRL) Schematics
7555 WH/BN
7556 YE
7543 GY/YE
6817 YE
5361 BU/YE
5360 BK/BN
5359 WH
13 GN/GY
2915 WH/GN
2916 VT/BU
111 GN/WH
307 YE/BN
524 WH
306 GN/BN
103 WH/VT
278 WH/BU
K9 Body Control Module
X3
7
18
X1
3
X5
6
25
26
24
X2
20
29
23
31
27
32
21
19
X1
17
F49DR
F49DR
5V
FTP
F31DR
F31DR
F49DR
F4DR
F49DR
F4DR
F49DR
F4DR
F4DR
X4
15
X3
30
6
X2
12
25
26
1
X5
5
15
1
X1
1
4
X7
24
18
8
X6
5
22
JHD
D07/DCH
S0M
S0M
TCP
TB5/TCP
1788 BU/VT
6844 BU/YE
391 BN/BU
1714 YE/BU
6009 BK/GY
94 WH/BK
157 GY
157 GY
7557 WH/YE
4786 GN/VT
4782 WH/BK
7558 VT
4783 YE
737 GN/GY
12481 WH/VT
5797 YE/BU
4064 BN/GN
Antilock Brake System Schematics
Wiper/Washer Schematics
Interior Lights Schematics
Liftgate Schematics
Hood Latch Schematics

6885606

## Body Control System Schematics (Subsystem References 3 of 4)


6885607
K9 Body Control Module
Starting and Charging Schematics
Parking Assistance Systems Schematics
Remote Function Schematics
Immobilizer Schematics
Door Lock/ Indicator Schematics
Trailering Systems Schematics
1111 BU
1110 GN
3161 BU/BN
2555 GY/GN
5852 GN/BN
3555 GY/BK
3554 BU
4304 GN/BK
4303 GN/YE
3569 GN/GY
3568 BN/GN
4302 VT/WH
4301 VT
3553 WH
3552 BN/BK
4997 WH/GY
4996 BN/BK
-(5W4/9C1)
X3
X4
X5
X6
X7
X8
F49DR
F33DR
F4DR
3266 WH/BU
3268 GY/BK
3269 BN/WH
6677 YE/BK
6675 VT/WH
2682 YE/GN
1091 BU/YE
2676 GY/VT
4994 WH/VT
4995 GY/BU
2675 BU
2680 GY/BK
1094 VT/WH
126 VT/GY
2681 GY
2679 WH
3691 WH/BU
-JL1
A

## Body Control System Schematics (Subsystem References 4 of 4)


Rear Seat Schematics
Steering Wheel Secondary/ Configurable Control Schematics
Driver Assistance Systems Schematics
Upfitter Provision Schematics
Release Systems Schematics
6812 YE
5526 VT/YE
2203 WH/BN
3152 WH
3153 GY/WH
3037 YE/BN
3038 BN
4892 BN/BU
8021 BN/GY
8022 GY/VT
6821 WH/VT
6817 YE
8917 BU/BN
5797 YE/BU
6128 BU/WH
2689 BU
6188 GY/YE
ATN/ATT
HS1-A45
HS1-A45
5W4/9C1
5W4/9C1
5W4/9C1
5W4/9C1
5W4/9C1
5W4/9C1
TB4
TB4
N08
X1 13
X2 9
10
X3 13
27
X8 13
14
X3 2
22
29
20
X5 6
X6 17
5
X8 1
X7 2
17
F4DR
F49DR
F31DR
F31DR
F4DR
F49DR
F4DR
F33DR
F33DR
F4DR
K9 Body Control Module
F49DR
F31DR
F4DR
F4DR
1
X7 27
X1 12
5
6
11
16
15
18
X3 16
X2 30
X5 2
3
22
11
X2 28
22
UTU/UTV
7598 VT/BU
728 GY
754 BU/GY
4634 WH/YE
4636 GY/GN
6137 GY
590 GY
734 BU/WH
761 GN/BU
407 BK/YE
7573 BU/BN
7574 BU/YE
193 BN/VT
28 BN/WH
3287 GN/WH
3602 GY/BU
Theft Deterrent System Schematics
HVAC Schematics
Defogger Schematics
Horn Schematics
Image Display Camera Schematics
L O C
D E S C

6885608

# Description and Operation

## Data Link Communications Description and Operation

**Note:** This is an overview of different serial data buses used by control modules to communicate with each others. Use *Data Communication Schematics 9-3* to find out which serial data buses are configured for a specific vehicle.

## Vehicle Intelligence Platform (VIP) Data Link Communications Overview

There are many components in a vehicle that rely on information from other sources, transmit information to other sources, or both. Serial data communication networks provide a reliable, cost effective, way for various components of the vehicle to “talk” to one another and share information.

General Motors uses a number of different communication buses to ensure the timely and efficient exchange of information between control modules. When compared to each other, some of these buses are different in nature as far as speed, signal characteristics, and behavior.

On the other hand, when other buses are compared to each other they have similar characteristics and simply operate in parallel. In this case they are used to group together components which have high interaction. Examples are the Controller Area Network (CAN), private CAN, and Local Interconnect Network (LIN) buses. This allows them to communicate with each other on a bus with reduced message congestion insuring faster and the more timely exchange of information than if all vehicle control modules were on a single bus.

The majority of information that exists within a given network generally stays local; however some information will have to be shared on other networks. Control modules designated as Gateways perform the function of transferring information between the various buses. A Gateway module is connected to at least 2 buses and will interact with each network according to its message strategy and transmission models.

CAN provides the capability for a receiving control module to monitor message transmissions from other control modules in order to determine if messages of interest are not being received. The primary purpose is to allow reasonable default values to be substituted for the information no longer being received. Additionally, a control module may set a Diagnostic Trouble Code (DTC) to indicate that the control module it is expecting information from is no longer communicating.

## K9 Body Control Module (BCM)

The body control system consists of the K9 Body Control Module, communications, and various input and outputs. Some inputs, outputs and messages require other control modules to interact with the K9 Body Control Module. The K9 Body Control Module also has discrete input and output terminals to control the vehicle's body functions. The K9 Body Control Module is wired to CAN bus and multiple LIN buses and acts as a gateway between them.

The various K9 Body Control Module input and output circuits are illustrated in the corresponding functional areas on the K9 Body Control Module electrical schematics. Refer to the *Body Control System Schematics 9-28* for more detailed information.

## K56 Serial Data Gateway Module

The K56 Serial Data Gateway Module gates messages between the CAN networks described in the Controller Area Network (CAN) Bus Description section below. The K56 Serial Data Gateway Module needs to know what CAN control modules are present on a given vehicle in order to enable/disable loss of communication DTCs and to know which CAN control modules to track for their communication status. The K56 Serial Data Gateway Module has the ability to learn the diagnostic addresses list of CAN control modules to identify what CAN control modules are equipped on the vehicle and what CAN buses they are on. If the K56 Serial Data Gateway Module is replaced, this learn/verification process will have to be done again through K56 Serial Data Gateway Module programming and setup procedure in SPS. This learn process will not cause any previously learned contents to be forgotten/overwritten. If the learn process is not done on a new K56 Serial Data Gateway Module, DTC U1977 will be set until the learn procedure is executed. If the learn is invalid due to control module internal malfunction or a K56 Serial Data Gateway Module swap, DTC U3000 42 or DTC U3002 56 will be set. If any of these DTCs sets, the K56 Serial Data Gateway Module will enable loss of communication for all CAN control modules. This will result in loss of communication DTCs being set against CAN control modules that are not equipped on the vehicle.

A fault can be localized by monitoring the normal mode messages on a CAN bus. The K56 Serial Data Gateway Module will monitor one signal per CAN control module per CAN bus to determine control module status. When a signal times out, a loss of communication event will be started.

## Controller Area Network (CAN) Bus Description

The CAN buses are used where data needs to be exchanged at a high enough rate to minimize the delay between the occurrence of a change in sensor value and the reception of this information by a control device using the information to adjust vehicle system performance.

Each CAN serial data network consists of two twisted wires. One signal circuit is identified as CAN-High and the other signal circuit is identified as CAN-Low. At each end of the data bus there is a 124 Ω termination resistor between the CAN-High and CAN-Low circuits. Most CAN control modules have an internal resistance of 4.950K Ω. There may be one or two CAN control modules that have a higher internal resistance like the K60 Column Lock Module which has an internal resistance of 77.4K Ω. The internal resistance of CAN control modules causes lower terminating resistor reading when splitting the CAN network to check for faults. The more CAN control modules on the network the lower the terminating resistor will read.

The data to be transmitted over a CAN bus is represented by the voltage difference between the CAN-High signal voltage and the CAN-Low signal voltage. Data symbols (1’s and 0’s) are transmitted sequentially at the following rate:

- CAN 1 (circuits 4986 & 4987) = 500 Kbit/s
- CAN 2 (circuits 4978 & 4979) = 2 Mbit/s
- CAN 3 (circuits 4976 & 4977) = 500 Kbit/s
- CAN 4 (circuits 4100 & 4101) = 500 Kbit/s
- CAN 5 (circuits 4984 & 4985) = 500 Kbit/s
- CAN 6 (circuits 4980 & 4981) = 5 Mbit/s
- CAN 7 (circuits 4982 & 4983) = 5 Mbit/s
- CAN 8 (circuits 4104 & 4105) = 2 Mbit/s
- CAN 9 (circuits 4102 & 4103) = 2 Mbit/s
- CAN 10 (circuits 10800 & 10801) = 2 Mbit/s

**Classical CAN:** CAN 1, CAN 3, CAN 4, and CAN 5 are Classical CAN buses. In Classical CAN, the entire message is transmitted at the same baud rate. The size of the data field is limited to 8 bytes.

**CAN FD:** CAN 2, CAN 8, CAN 9, and CAN 10 are CAN FD buses (FD = Flexible Data-Rate). In CAN FD, the data field of the message is transmitted at the same or at a faster baud rate. The size of the data field can be up to 64 bytes in length.

When the two wire bus is at rest the CAN-High and CAN-Low signal circuits are not being driven and this represents a logic “1”. In this state both signal circuits are at the same voltage of 2.5 V. The differential voltage is approximately 0 V.

When a logic “0” is to be transmitted, the CAN-High signal circuit is driven higher to about 3.5 V and the CAN-Low circuit is driven lower to about 1.5 V. The differential voltage becomes approximately 2.0 (+/-0.5) V.

The CAN 1, CAN 2, CAN 3, CAN 4, CAN 5, CAN 8, CAN 9, and CAN 10 buses are used to communicate between the K56 Serial Data Gateway Module and other CAN control modules.

The CAN 8 and CAN 9 buses are reserved for the following systems:

- The CAN 8 bus is reserved for most control modules and sensors related to active safety system, if applicable.
- The CAN 9 bus is reserved for most control modules and sensors related to Hybrid/EV system, if applicable.

The following CAN buses are between the X84 Data Link Connector and the K56 Serial Data Gateway Module:

- The CAN 6 bus is used for CAN diagnostics and programming.
- The CAN 7 bus is used for programming by assembly plant only.
- The Private Presentation CAN 1 bus (circuits 2577 & 2578) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.
- The Private Presentation CAN 2 bus (circuits 2579 & 2580) is used by Engineering to observe data communications on CAN buses not directly accessible at the X84 Data Link Connector. It requires special security access and will not be used in a service environment.

## Private Powertrain CAN Bus Description

The Private Powertrain CAN bus (circuits 4054 & 4055) is reserved for Powertrain components. It has a transmission rate of 500 Kbit/s. Sometimes communication is required between the Private Powertrain CAN bus and another CAN bus. This is accomplished by using the K20 Engine Control Module / K45 Powertrain Control Module (for gas vehicles) or K16 Battery Energy Control Module (for electric vehicles) as the Gateway module. Since the Private Powertrain CAN bus and other CAN buses operate in the same manner, the diagnostics for each are similar.

## Local Interconnect Network (LIN) Bus Description

The LIN Bus consists of a single wire with a transmission rate of 10.417 Kbit/s or 19.23 Kbit/s. This bus is used to exchange information between a master control module and other smart devices which provide supporting functionality. This type of configuration does not require the capacity or speed of a CAN bus and is thus relatively simpler.

The data symbols (1’s and 0’s) to be transmitted are represented by different voltage levels on the communication bus. When the LIN Bus is at rest and is not being driven, the signal is in a high voltage state of approximately Vbatt. This represents a logic “1”. When a logic “0” is to be transmitted, the signal voltage is driven low to about ground (0.0 V).

## Ethernet Bus Description

Ethernet is a data communication technology that uses a single twisted copper pair of wires at speeds of 100 Mbit/s and 1000 Mbit/s. The Ethernet system uses point-to-point communication that is connected via an Ethernet switch [Module <--> Switch <--> Module]. The Ethernet bus does not use terminating resistors.

The K56 Serial Data Gateway Module and the A11 Radio have an Ethernet switch that connects to other Ethernet modules. The K56 Serial Data Gateway Module and the A11 Radio communicate with other devices and systems in the vehicle via CAN and LIN buses. Diagnostic Trouble Codes will be read on CAN to diagnose Ethernet, LIN and system faults.

**Note:** Ethernet harness failures should only be repaired using an appropriate kit to perform de-pin/re-pin overlays or in cases where the wiring harness repair kits are not available, the entire harness should be replaced. No crimps or splicing should be performed on the Ethernet wiring harness.

### Ethernet 1

Ethernet bus 1 consists of 2 twisted pair of wires [1 pair for Ethernet bus 1R (circuits 4972 & 4973) and 1 pair for Ethernet bus 1T (circuits 4974 & 4975)]. It is connected between X84 Data Link Connector (DLC) and K56 Serial Data Gateway Module. This bus is used for diagnostics and service programming of control modules using Ethernet instead of CAN. The K56 Serial Data Gateway Module will convert Ethernet serial data to CAN as necessary, and vice versa. There is an Ethernet enable circuit (circuit 7207) which can be used to wake up the K56 Serial Data Gateway Module for Ethernet diagnostic and programming.

### Ethernet 2

Ethernet bus 2 (circuits 4757 & 4758) is for connection between the A11 Radio and the K56 Serial Data Gateway Module.

### Ethernet 3

Ethernet bus 3 (circuits 7208 & 7209) is for connection between the following control modules depending on vehicle configuration:

- K56 Serial Data Gateway Module and K179 Automated Driving Mapping Module.
- K56 Serial Data Gateway Module and K124 Image Processing Module.
- K56 Serial Data Gateway Module and B174W Front View Camera - Windshield.

### Ethernet 4

Ethernet bus 4 (circuits 7210 & 7211) is for connection between the following control modules:

- K56 Serial Data Gateway Module and K73 Telematic Control Module for vehicles equipped with IOR radio.
- A11 Radio and K73 Telematic Control Module for vehicles equipped with other radios.

### Ethernet 5

Ethernet bus 5 (circuits 7212 & 7213) is for connection between the A11 Radio and P22F Video Display - Right Front Seat Back.

### Ethernet 6

Ethernet bus 6 (circuits 7214 & 7215) is for connection between the A11 Radio and T3 Audio Amplifier.

### Ethernet 7

Ethernet bus 7 (circuits 7216 & 7217) is for connection between the K56 Serial Data Gateway Module and P16 Instrument Panel Cluster Control Module or K190 Off-Board Charger Control Module.

### Ethernet 11

Ethernet bus 11 (circuits 7224 & 7225) is for connection between the K124 Image Processing Module and K179 Automated Driving Mapping Module.

### Ethernet 14

Ethernet bus 14 (circuits 7230 & 7231) is for connection between the A11 Radio and P29 Head-Up Display.

### Ethernet 15

Ethernet bus 15 (circuits 7232 & 7233) is for connection between the K56 Serial Data Gateway Module, K161 Vehicle Performance Data Recorder, and P22F Video Display - Passenger Seat Back.

## X84 Data Link Connector (DLC)

The X84 Data Link Connector is a standardized 16-cavity connector. Connector design and location is dictated by an industry wide standard, and is required to provide the following:

- Terminal 1: CAN Bus 7 Serial Data [+]
- Terminal 2: Private Presentation CAN Bus 1 Serial Data [+]
- Terminal 3: Ethernet Bus 1R [+]
- Terminal 4: Scan tool power ground
- Terminal 5: Common signal ground
- Terminal 6: CAN Bus 6 Serial Data [+]
- Terminal 7: Private Presentation CAN Bus 2 Serial Data [+]
- Terminal 8: Ethernet Bus 1 Enable Signal
- Terminal 9: CAN Bus 7 Serial Data [-]
- Terminal 10: Private Presentation CAN Bus 1 Serial Data [-]
- Terminal 11: Ethernet Bus 1R [-]
- Terminal 12: Ethernet Bus 1T [+]
- Terminal 13: Ethernet Bus 1T [-]
- Terminal 14: CAN Bus 6 Serial Data [-]
- Terminal 15: Private Presentation CAN Bus 2 Serial Data [-]
- Terminal 16: Scan tool power, B+

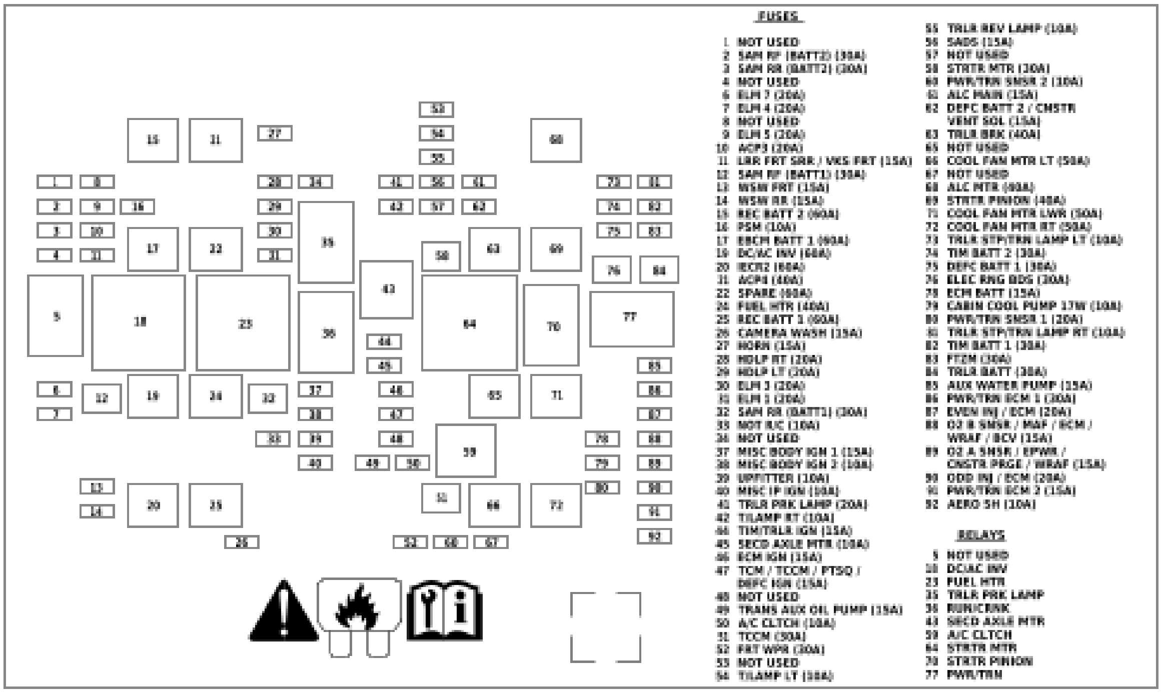
## Serial Data Reference

The scan tool communicates over the various buses on the vehicle. When a scan tool is installed on a vehicle, the scan tool will try to communicate with every control module that could be optioned into the vehicle. If an option is not installed on the vehicle, the scan tool will display No Communication for that optional control module. In order to avert misdiagnoses of No Communication with a specific control module, refer to [Link target (target-id 148085-) not found] for a list of control modules and the buses they communicate with. Use schematics and specific vehicle build RPO codes to determine optional control modules.

# Electrical Component and Inline Harness Connector End Views

## Component Locator

### X50A Engine Wiring Harness Junction Block Label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FUSES

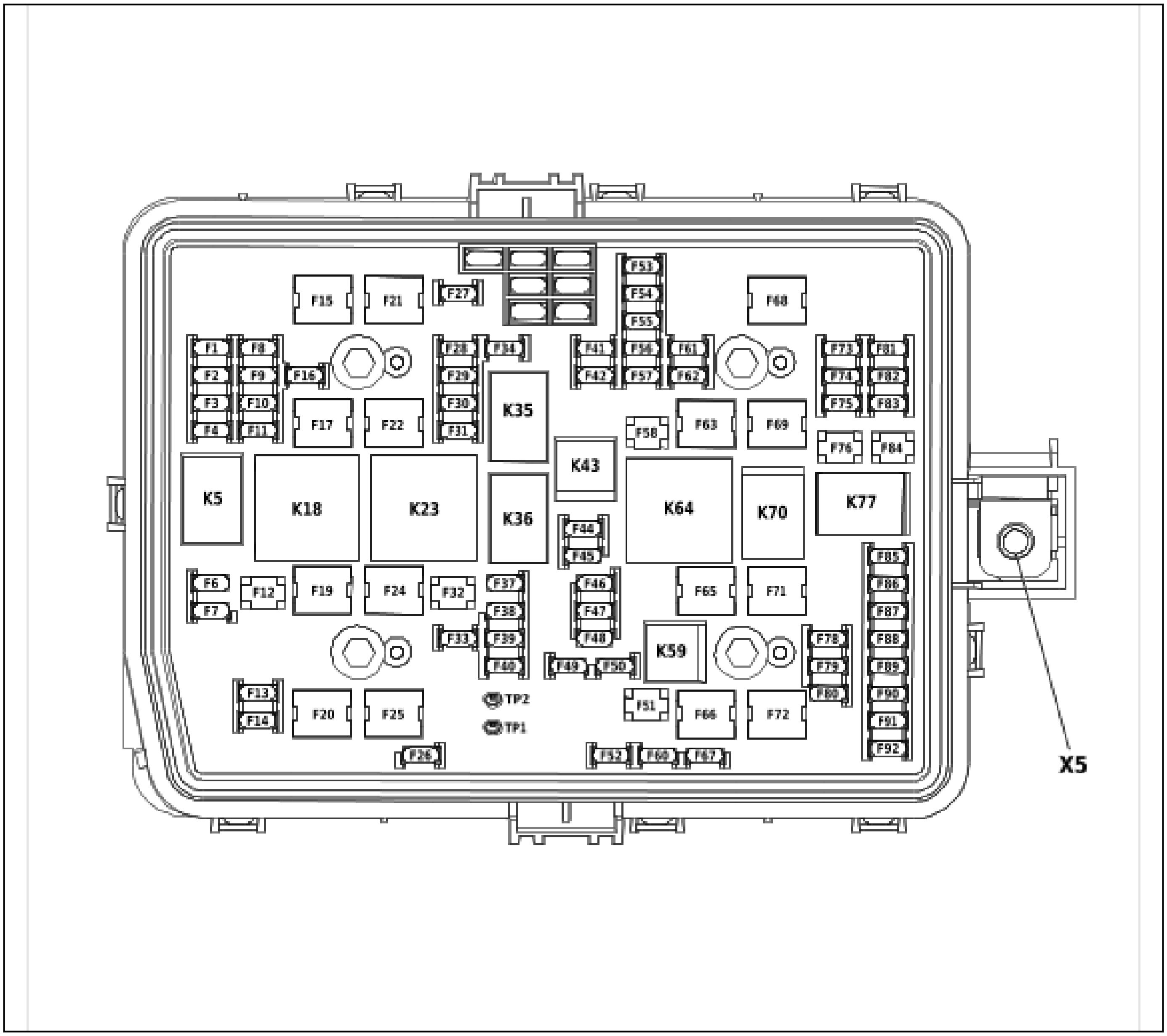
| | |
|---|---|
| 1 | NOT USED |
| 2 | SAM RF (BATT2) (30A) |
| 3 | SAM RR (BATT2) (30A) |
| 4 | NOT USED |
| 6 | ELM 7 (20A) |
| 7 | ELM 4 (20A) |
| 8 | NOT USED |
| 9 | ELM 5 (20A) |
| 10 | ACP3 (20A) |
| 11 | LRR FRT SRR / VKS FRT (15A) |
| 12 | SAM RF (BATT1) (30A) |
| 13 | WSW FRT (15A) |
| 14 | WSW RR (15A) |
| 15 | REC BATT 2 (60A) |
| 16 | PSM (10A) |
| 17 | EBCM BATT 1 (60A) |
| 19 | DC/AC INV (60A) |
| 20 | IECR2 (60A) |
| 21 | ACP4 (40A) |
| 22 | SPARE (60A) |
| 24 | FUEL HTR (40A) |
| 25 | REC BATT 1 (60A) |
| 26 | CAMERA WASH (15A) |
| 27 | HORN (15A) |
| 28 | HDLP RT (20A) |
| 29 | HDLP LT (20A) |
| 30 | ELM 3 (20A) |
| 31 | ELM 1 (20A) |
| 32 | SAM RR (BATT1) (30A) |
| 33 | MOT R/C (10A) |
| 34 | NOT USED |
| 37 | MISC BODY IGN 1 (15A) |
| 38 | MISC BODY IGN 2 (10A) |
| 39 | UPFITTER (10A) |
| 40 | MISC IP IGN (10A) |
| 41 | TRLR PRK LAMP (20A) |
| 42 | TLAMP RT (10A) |
| 44 | TIM/TRLR IGN (15A) |
| 45 | SECD AXLE MTR (10A) |
| 46 | ECM IGN (15A) |
| 47 | TCM / TCCM / PTSO / DEFC IGN (15A) |
| 48 | NOT USED |
| 49 | TRANS AUX OIL PUMP (15A) |
| 50 | A/C CLTCH (10A) |
| 51 | TCCM (30A) |
| 52 | FRT WPR (30A) |
| 53 | NOT USED |
| 54 | TLAMP LT (10A) |
| 55 | TRLR REV LAMP (10A) |
| 56 | SADS (15A) |
| 57 | NOT USED |
| 58 | STRTR MTR (30A) |
| 60 | PWR/TRN SNSR 2 (10A) |
| 61 | ALC MAIN (15A) |
| 62 | DEFC BATT 2 / CNSTR VENT SOL (15A) |
| 63 | TRLR BRK (40A) |
| 65 | NOT USED |
| 66 | COOL FAN MTR LT (50A) |
| 67 | NOT USED |
| 68 | ALC MTR (40A) |
| 69 | STRTR PINION (40A) |
| 71 | COOL FAN MTR LWR (30A) |
| 72 | COOL FAN MTR RT (50A) |
| 73 | TRLR STP/TRN LAMP LT (10A) |
| 74 | TIM BATT 2 (30A) |
| 75 | DEFC BATT 1 (30A) |
| 76 | ELEC RNG BDS (30A) |
| 78 | ECM BATT (15A) |
| 79 | CABIN COOL PUMP 17W (10A) |
| 80 | PWR/TRN SNSR 1 (20A) |
| 81 | TRLR STP/TRN LAMP RT (10A) |
| 82 | TIM BATT 1 (30A) |
| 83 | FTZM (30A) |
| 84 | TRLR BATT (30A) |
| 85 | AUX WATER PUMP (15A) |
| 86 | PWR/TRN ECM 1 (30A) |
| 87 | EVEN INJ / ECM (20A) |
| 88 | O2 B SNSR / MAF / ECM / WRAF / BCV (15A) |
| 89 | O2 A SNSR / EPWR / CNSTR PRGE / WRAF (15A) |
| 90 | ODD INJ / ECM (20A) |
| 91 | PWR/TRN ECM 2 (15A) |
| 92 | AERO SH (10A) |

RELAYS

| | |
|---|---|
| 5 | NOT USED |
| 10 | DC/AC INV |
| 23 | FUEL HTR |
| 35 | TRLR PRK LAMP |
| 36 | RUN/CRNK |
| 43 | SECD AXLE MTR |
| 59 | A/C CLTCH |
| 64 | STRTR MTR |
| 70 | STRTR PINION |
| 77 | PWR/TRN |

6665305

### X50A Engine Wiring Harness Junction Block Top View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K59
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F13
F14
F20
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F60
F67
X5

5619644

## Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | NOT USED | F1UA | — | • Not Used |
| F2 | SAM RF (BATT2) | F2UA | 30A | • Not Used |
| F3 | SAM RR (BATT2) | F3UA | 30A | • Not Used |
| F4 | NOT USED | F4UA | — | • Not Used |
| F6 | ELM 7 | F6UA | 20A | • K219 Lighting Control Module |
| F7 | ELM 4 | F7UA | 20A | • K219 Lighting Control Module |
| F8 | NOT USED | F8UA | — | • Not Used |
| F9 | ELM 5 | F9UA | 20A | • K219 Lighting Control Module |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F10 | ACP3 | F10UA | 20A | - K124 Image Processing Module (UKL) |
| F11 | LRR FRT SRR / VKS FRT | F11UA | 15A | - B233B Forward Range Radar Sensor - Long Range (UGN)<br>- B233LF Short Range Radar Sensor - Left Front (UKL)<br>- B233RF Short Range Radar Sensor - Right Front (UKL)<br>- B342A UHF Low Energy Remote Control Access Sensor Transceiver 1 (BOR/BOY)<br>- B342C UHF Low Energy Remote Control Access Sensor Transceiver 3 (BOR/BOY) |
| F12 | SAM RF (BATT1) | F12UA | 30A | - Not Used |
| F13 | WSW FRT | F13UA | 15A | - KR11 Windshield Washer Pump Relay |
| F14 | WSW RR | F14UA | 15A | - KR6 Rear Window Washer Pump Relay |
| F15 | REC BATT 2 | F15UA | 60A | - X53A Body Wiring Harness Junction Block - Rear |
| F16 | PSM | F16UA | 10A | - P25 Content Theft Deterrent Alarm (UTR) |
| F17 | EBCM BATT 1 | F17UA | 60A | - K160 Brake System Control Module<br>- X400 |
| F19 | DC/AC INV | F19UA | 60A | - T1 Accessory AC and DC Power Control Module (KI4/KI5) |
| F20 | IECR2 | F20UA | 60A | - X51R Instrument Panel Wiring Harnes Junction Block - Right |
| F21 | ACP4 | F21UA | 40A | - Not Used |
| F22 | SPARE | F22UA | 60A | - Not Used |
| F24 | FUEL HTR | F24UA | 40A | - KR22 Fuel Heater Relay (LZ0) |
| F25 | REC BATT 1 | F25UA | 60A | - X53A Body Wiring Harness Junction Block - Rear |
| F26 | CAMERA WASH | F26UA | 15A | - Not Used |
| F27 | HORN | F27UA | 15A | - P13 Horn |
| F28 | HDLP RT | F28UA | 20A | - E13RA Front Headlamp - Right |
| F29 | HDLP LT | F29UA | 20A | - E13LA Front Headlamp - Left |
| F30 | ELM 3 | F30UA | 20A | - K219 Lighting Control Module |
| F31 | ELM 1 | F31UA | 20A | - K219 Lighting Control Module |
| F32 | SAM RR (BATT1) | F32UA | 30A | - Not Used |
| F33 | NOT R/C | F33UA | 10A | - K60 Column Lock Module |
| F34 | NOT USED | F34UA | — | - Not Used |
| F37 | MISC BODY IGN 1 | F37UA | 15A | - K38 Chassis Control Module (G96)<br>- K160 Brake System Control Module<br>- P43 Forward Collision Alert Display (UEU-UV6) |

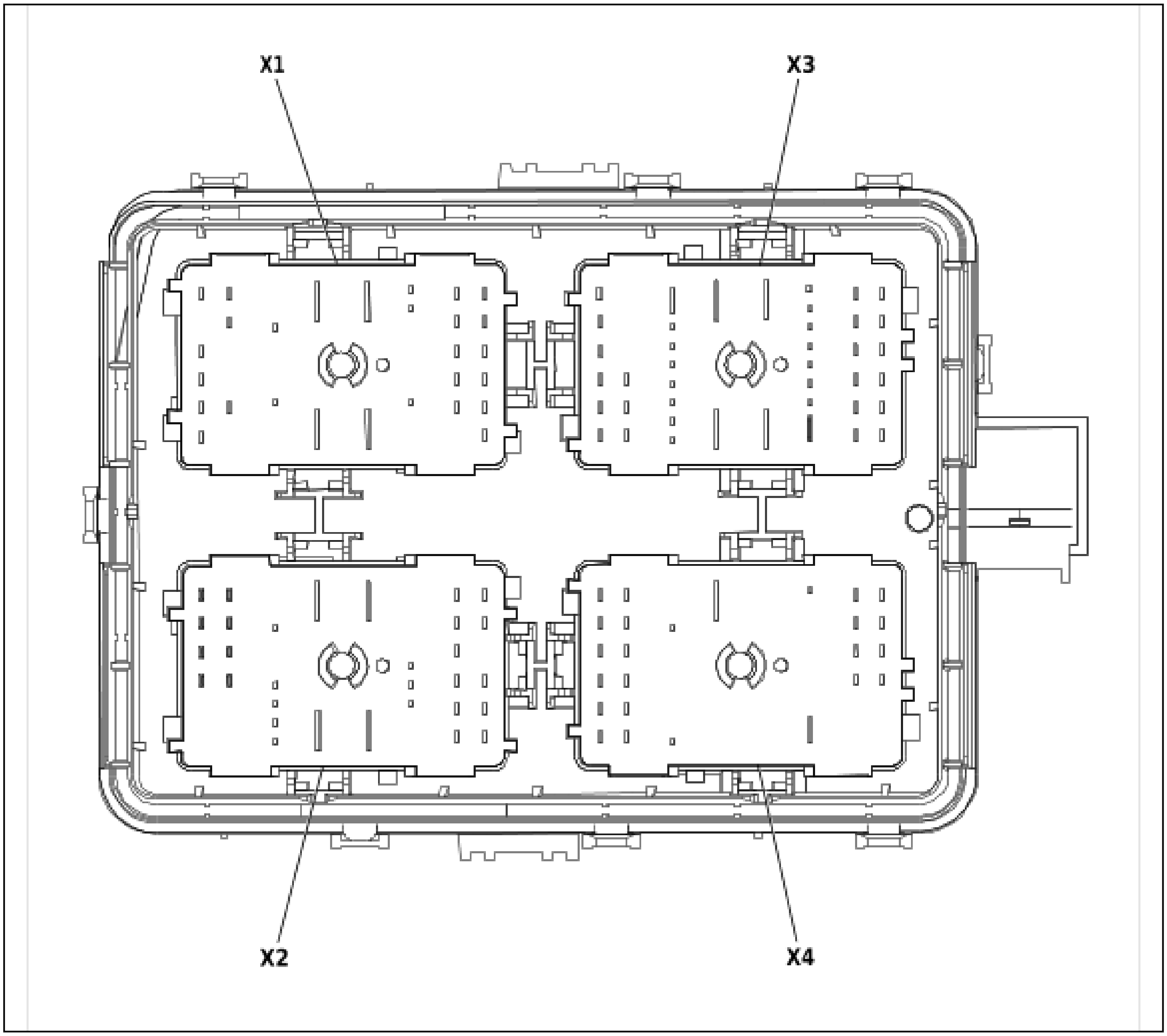
| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F38 | MISC BODY IGN 2 | F38UA | 10A | • K219 Lighting Control Module<br>• M73A Front Seat Back Ventilation Blower - Driver (KQV)<br>• M73B Front Seat Back Ventilation Blower - Passenger (KQV)<br>• M73D Front Seat Cushion Ventilation Blower - Driver (KQV)<br>• M73P Front Seat Cushion Ventilation Blower - Passenger (KQV)<br>• T1 Accessory AC and DC Power Control Module (KI4/KI5) |
| F39 | UPFITTER | F39UA | 10A | • W12FC Blunt Cut - Front Seat/Center Console (5W4/9C1)<br>• W12RCL Blunt Cut - Left Rear Cargo Trim (5W4/9C1) |
| F40 | MISC IP IGN | F40UA | 10A | • A10 Inside Rearview Mirror (DD8/DRZ)<br>• E40 Air Heater (C3A)<br>• K36 Restraints Control Module<br>• X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (5W4/9C1) |
| F41 | TRLR PRK LAMP | F41UA | 20A | • X88B Tow Vehicle Electrical Receptacle (-UET) |
| F42 | T/LAMP RT | F42UA | 10A | • E42R Rear Body Structure Stop Lamp - Right |
| F44 | TIM / TRLR IGN | F44UA | 15A | • K68 Trailer Lamp Control Module (UET) |
| F45 | SECD AXLE MTR | F45UA | 10A | • M26 Front Drive Axle Actuator (NP0/NQH) |
| F46 | ECM IGN | F46UA | 15A | • K20 Engine Control Module |
| F47 | TCM / TCCM / PTSQ / DEFC IGN | F47UA | 15A | • K69 Transfer Case Control Module (NP0/NQH)<br>• K71 Transmission Control Module<br>• K115 Reductant Control Module (LZ0) |
| F48 | NOT USED | F48UA | — | • Not Used |
| F49 | TRANS AUX OIL PUMP | F49UA | 15A | • G5 Automatic Transmission Auxiliary Fluid Pump |
| F50 | A/C CLTCH | F50UA | 10A | • Q2 Air Conditioning Clutch |
| F51 | TCCM | F51UA | 30A | • K69 Transfer Case Control Module (NP0/NQH) |
| F52 | FRT WPR | F52UA | 30A | • KR12B Windshield Wiper Motor Relay<br>• KR12C Windshield Wiper Motor Speed Control Relay |
| F53 | NOT USED | F53UA | — | • Not Used |
| F54 | T/LAMP LT | F54UA | 10A | • E42L Rear Body Structure Stop Lamp - Left |
| F55 | TRLR REV LAMP | F55UA | 10A | • X88B Tow Vehicle Electrical Receptacle (-UET) |
| F56 | SADS | F56UA | 15A | • K19 Suspension Control Module (Z95) |
| F57 | NOT USED | F57UA | — | • Not Used |
| F58 | STRTR MTR | F58UA | 30A | • KR27 Starter Relay |
| F60 | PWR/TRN SNSR 2 | F60UA | 10A | • B195A Nitrogen Oxides Sensor 1 (LZ0)<br>• T19 Multifunction Power Supply Converter (LZ0) |
| F61 | ALC MAIN | F61UA | 15A | • K5 Vehicle Level Control Module (F47) |
| F62 | DEFC BATT 2 / CNST VENT SOL | F62UA | 15A | • K115 Reductant Control Module (LZ0)<br>• Q13 Evaporative Emission Canister Vent Solenoid Valve (L84/L87) |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F63 | TRLR BRK | F63UA | 40A | • K67 Trailer Brake Control Module (JL1)<br>• W24 Blunt Cut - Trailer Brakes Provision (-JL1) |
| F65 | NOT USED | F65UA | — | • Not Used |
| F66 | COOL FAN MTR LT | F66UA | 50A | • G10L Cooling Fan Motor - Left |
| F67 | NOT USED | F67UA | — | • Not Used |
| F68 | ALC MTR | F68UA | 40A | • K5 Automatic Level Control Module (F47) |
| F69 | STRTR PINION | F69UA | 40A | • KR27C Engine Restart Relay (L84/L87) |
| F71 | COOL FAN MTR LWR | F71UA | 50A | • G10LW Engine Cooling Fan Motor - Lower (LZ0) |
| F72 | COOL FAN MTR RT | F72UA | 50A | • G10R Engine Cooling Fan Motor - Right (L84/L87) |
| F73 | TRLR STP / TRN LAMP LT | F73UA | 10A | • X88B Tow Vehicle Electrical Receptacle (-UET) |
| F74 | TIM BATT 2 | F74UA | 30A | • K68 Trailer Lamp Control Module (UET) |
| F75 | DEFC BATT 1 | F75UA | 30A | • K115 Reductant Control Module (LZ0) |
| F76 | ELEC RNG BDS | F76UA | 30A | • K4 Running Board Control Module (B3L) |
| F78 | ECM BATT | F78UA | 15A | • K20 Engine Control Module |
| F79 | CABIN COOL PUMP 17W | F79UA | 10A | • G17 Heater Coolant Pump |
| F80 | PWR/TRN SNSR 1 | F80UA | 20A | • B136 Exhaust Particulate Matter Sensor (LZ0)<br>• B195B Nitrogen Oxides Sensor 2 (LZ0)<br>• B195C Nitrogen Oxides Sensor 3 (LZ0)<br>• K111 Fuel Pump Power Control Module (LZ0)<br>• R29 Fuel Filter (LZ0) |
| F81 | TRLR STP/TRN LAMP RT | F81UA | 10A | • X88B Tow Vehicle Electrical Receptacle (-UET) |
| F82 | TIM BATT 1 | F82UA | 30A | • K68 Trailer Lamp Control Module (UET) |
| F83 | FTZM | F83UA | 30A | • K111 Fuel Pump Driver Power Module |
| F84 | TRLR BATT | F84UA | 30A | • X88B Tow Vehicle Electrical Receptacle |
| F85 | AUX WATER PUMP | F85UA | 15A | • M10 Charge Air Cooler Coolant Pump (LZ0) |
| F86 | PWR/TRN ECM 1 | F86UA | 30A | • K20 Engine Control Module |
| F87 | EVEN INJ / ECM | F87UA | 20A | • K20 Engine Control Module (L84/L87)<br>• T8B Ignition Coil 2 (L84/L87)<br>• T8D Ignition Coil 4 (L84/L87)<br>• T8F Ignition Coil 6 (L84/L87)<br>• T8H Ignition Coil 8 (L84/L87) |
| F88 | O2 B SNSR / MAF / ECM / WRAF / BCV | F88UA | 15A | • B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (L84/L87)<br>• B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (L84/L87)<br>• B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (L84/L87)<br>• B75 Mass Airflow Sensor<br>• K20 Engine Control Module |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F89 | O2 A SNSR / EPWR / CNSTR PRGE / WRAF | F89UA | 15A | • B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (L84/L87)<br>• Q12 Evaporative Emission Canister Purge Solenoid Valve (L84/L87)<br>• Q44 Engine Oil Pressure Control Solenoid Valve (L87) |
| F90 | ODD INJ / ECM | F90UA | 20A | • K20 Engine Control Module<br>• T8A Ignition Coil 1 (L84/L87)<br>• T8C Ignition Coil 3 (L84/L87)<br>• T8E Ignition Coil 5 (L84/L87)<br>• T8G Ignition Coil 7 (L84/L87) |
| F91 | PWR/TRN ECM 2 | F91UA | 15A | • K20 Engine Control Module (L84/L87) |
| F92 | AERO SH | F92UA | 10A | • M96A Active Grille Air Shutter Actuator 1<br>• M96B Active Grille Air Shutter 2 Actuator (WMI) |
| **Relays** | | | | |
| K5 | NOT USED | — | — | • Not Used |
| K18 | DC/AC INV | KR202 Accessory AC and DC Power Control Module Relay | — | • F19UA (KI4/KI5) |
| K23 | FUEL HTR | KR22 Fuel Heater Relay | — | • R29 Fuel Filter (LZ0) |
| K35 | TRLR PRK LAMP | KR125 Trailer Parking Lamp Relay | — | • F41UA (-UET) |
| K36 | RUN/CRNK | KR73 Ignition Main Relay | — | • F33UA<br>• F37UA<br>• F38UA<br>• F39UA<br>• F40UA<br>• F44UA<br>• F46UA<br>• F47UA<br>• F48UA |
| K43 | SECD AXLE MTR | KR203 Front Drive Axle Actuator Relay | — | • F45UA (NP0/NQH) |
| K59 | A/C CLTCH | KR29 A/C Compressor Clutch Relay | — | • F50UA |
| K64 | STRTR MTR | KR27 Starter Relay | — | • M64 Starter Motor |
| K70 | STRTR PINION | KR27C Engine Restart Relay | — | • M64 Starter Motor (L84/L87) |
| K77 | PWR/TRN | KR75 Engine Controls Ignition Relay | — | • F67UA<br>• F85UA<br>• F86UA<br>• F87UA<br>• F88UA<br>• F89UA<br>• F90UA |

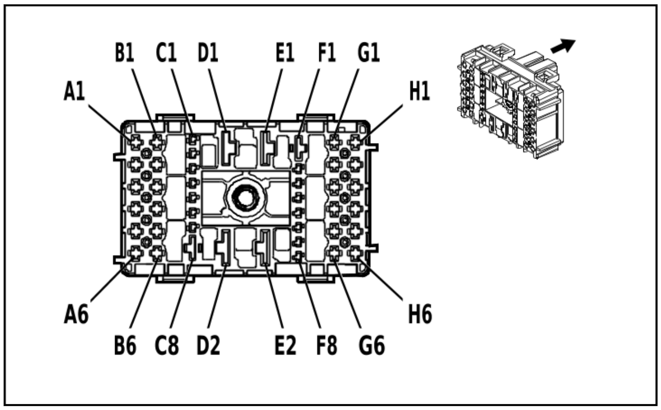
| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| | | | | • F91UA<br>• F92UA<br>• KR29 Air Conditioning Compressor Relay<br>• KR200 Engine Controls Sensor Supply Voltage Relay |
| **Note: Relays listed below are non-serviceable Printed Circuit Board (PCB) relays and are internal to the block.** | | | | |
| — | — | KR3 Horn Relay | — | • F27UA |
| — | — | KR6 Rear Window Washer Pump Relay | — | • G24 Windshield Washer Pump |
| — | — | KR11 Windshield Washer Pump Relay | — | • G24 Windshield Washer Pump |
| — | — | KR12B Windshield Wiper Motor Relay | — | • M75 Windshield Wiper Motor |
| — | — | KR12C Windshield Wiper Motor Speed Control Relay | — | • M75 Windshield Wiper Motor |
| — | — | KR61 Trailer Backup Lamp Relay | — | • F55UA (-UET) |
| — | — | KR63L Trailer Stop/ Turn Signal Lamp Relay - Left | — | • F73UA (-UET) |
| — | — | KR63R Trailer Stop/ Turn Signal Lamp Relay - Right | — | • F81UA (-UET) |
| — | — | KR200 Engine Controls Sensor Supply Voltage Relay | — | • F60UA (LZ0)<br>• F80UA (LZ0) |
| **Test Points** | | | | |
| TP1 | CKT 95 | TP1 | — | • KR12C Windshield Wiper Speed Control Relay |
| TP2 | CKT 92 | TP2 | — | • KR12C Windshield Wiper Speed Control Relay |

## X50A Engine Wiring Harness Junction Block Bottom View



5041382

### X50A Engine Wiring Harness Junction Block X1



4994109

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33384590
- Service Connector: 19370824
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( BU)

## Terminal Part Information

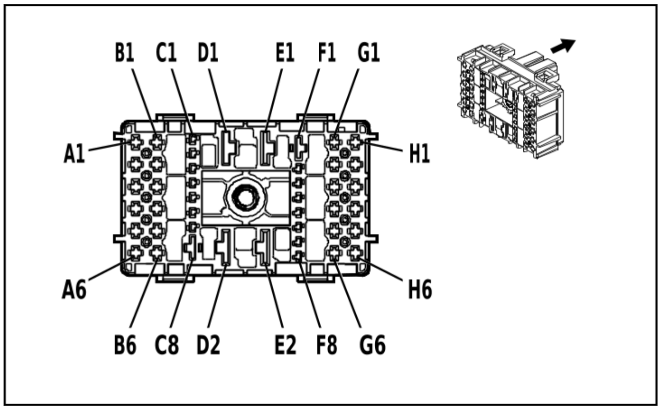
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764079 | J-35616-22 (RD) | J-38125-11A |
| III | 84779405 | J-35616-35 (VT) | J-38125-212 |
| IV | Not required | J-35616-22 (RD) | No Tool Required |

## X50A Engine Wiring Harness Junction Block X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 | 1 | RD / VT | 7140 | Battery Positive Voltage | III | — |
| A2 | 1 | RD / BU | 540 | Battery Positive Voltage | III | — |
| A3 | — | — | — | Not Occupied | — | — |
| A4 | 0.75 | BK | 250 | Ground | III | — |
| A5 | 0.75 | GY / VT | 228 | Windshield Washer Pump Control | III | — |
| A6 | 0.75 | BU / VT | 392 | Rear Window Washer Pump Control | III | — |
| B1 - C2 | — | — | — | Not Occupied | — | — |
| C3 | 0.5 | WH / GN | 4628 | DC/AC Inverter Relay Control | I | — |
| C4 | 0.35 | BN / GY | 2268 | Windshield Washer Relay Control | I | — |
| C5 - C6 | — | — | — | Not Occupied | — | — |
| C7 | 0.35 | GN / WH | 2270 | Rear Window Washer Relay Control | I | — |
| C8 | — | — | — | Not Occupied | — | — |
| D1 | 5 | BN / BK | 4629 | DC/AC Inverter Control | II | — |
| D2 | 10 | RD / WH | 342 | Battery Positive Voltage | IV | — |
| E1 | — | — | — | Not Occupied | — | — |
| E2 | 10 | RD / GN | 1942 | Battery Positive Voltage | IV | — |
| F1 - F5 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| F6 | 0.35 | WH / VT | 860 | Windshield Wiper Switch High Signal | I | — |
| F7 - G2 | — | — | — | Not Occupied | — | — |
| G3 | 0.35 | BU / VT | 807 | Ignition Off/Accessory Ignition Voltage | III | — |
| G4 | 0.5 | GN / VT | 5199 | Run/Crank Relay Coil Control | III | — |
| G5 | 2 | BK | 150 | Ground | III | — |
| G6 | 0.35 | GY | 91 | Windshield Wiper Motor Relay Coil Control | III | — |
| H1 | 0.5 | VT / WH | 639 | Run/Crank Ignition 1 Voltage | III | — |
| H2 | 0.5 | VT / WH | 1139 | Run/Crank Ignition 1 Voltage | III | — |
| H3 | 0.75 | VT / WH | 4939 | Run/Crank Ignition 1 Voltage | III | — |
| H4 | 0.5 | VT / WH | 239 | Run/Crank Ignition 1 Voltage | III | — |
| H5 | 2 | WH | 92 | Windshield Wiper Motor High Speed Control | III | — |
| H6 | 2 | YE / BN | 95 | Windshield Wiper Motor Low Speed Control | III | — |

### X50A Engine Wiring Harness Junction Block X2



4994132

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33384594
- Service Connector: 19371174
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( GN)

## Terminal Part Information

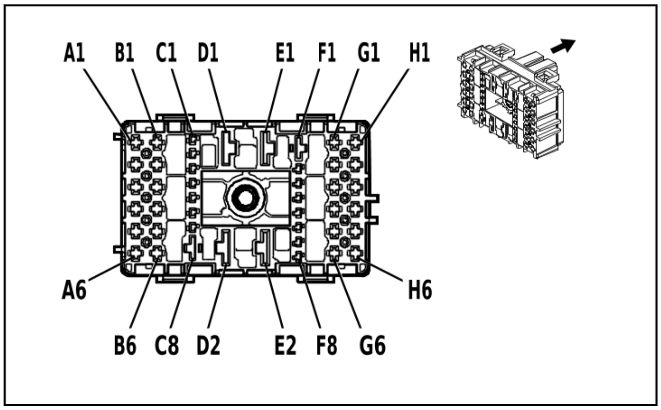
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84779405 | J-35616-35 (VT) | J-38125-212 |
| III | Not required | J-35616-22 (RD) | No Tool Required |

## X50A Engine Wiring Harness Junction Block X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 - B3 | — | — | — | Not Occupied | — | — |
| B4 | 1 | RD / GN | 7740 | Battery Positive Voltage | II | — |
| B5 | 1 | RD / BN | 13240 | Battery Positive Voltage | II | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| B6 | 0.5 | RD / GN | 3140 | Battery Positive Voltage | II | — |
| C1 | 0.35 | YE / BU | 318 | Left Rear Trailer Stop/Turn Lamp Control | I | — |
| C2 | 0.35 | GN / BN | 319 | Right Rear Trailer Stop/Turn Lamp Control | I | — |
| C3 - C6 | — | — | — | Not Occupied | — | — |
| C7 | 0.5 | RD / YE | 13140 | Battery Positive Voltage | I | — |
| C8 | — | — | — | Not Occupied | — | — |
| D1 | 10 | RD / WH | 2942 | Battery Positive Voltage | III | — |
| D2 | 10 | RD / YE | 442 | Battery Positive Voltage | III | — |
| E1 - F2 | — | — | — | Not Occupied | — | — |
| F3 | 0.35 | BU / BN | 38 | Backup Lamp Relay Control | I | — |
| F4 | 0.5<br>0.35 | BN / WH<br>BN / WH | 28<br>28 | Horn Relay Control<br>Horn Relay Control | I<br>I | - ( 5W4/ 9C1)<br>5W4/ 9C1 |
| F5 - F8 | — | — | — | Not Occupied | — | — |
| G1 | 0.75 | BN / GY | 29 | Horn Control | II | — |
| G2 | 0.75 | RD / GY | 11240 | Battery Positive Voltage | II | — |
| G3 | 1.5 | RD / YE | 740 | Battery Positive Voltage | II | — |
| G4 | 1.5 | RD / WH | 640 | Battery Positive Voltage | II | — |
| G5 | 1 | RD / BN | 1440 | Battery Positive Voltage | II | — |
| G6 | 1 | RD / BN | 1140 | Battery Positive Voltage | II | — |
| H1 - H4 | — | — | — | Not Occupied | — | — |
| H5 | 0.75 | RD / BU | 11340 | Battery Positive Voltage | II | — |
| H6 | 0.35 | WH / BN | 7055 | Auxiliary Park Lamp Relay Control | II | — |

### X50A Engine Wiring Harness Junction Block X3



4992608

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 33384584
- Service Connector: 19371176
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( GY)

## Terminal Part Information

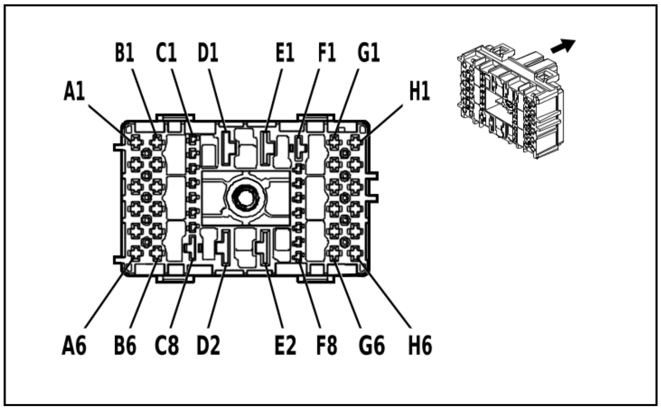
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84764079 | J-35616-22 (RD) | J-38125-11A |
| IV | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X50A Engine Wiring Harness Junction Block X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 | 0.75 | VT / GN | 439 | Run/Crank Ignition 1 Voltage | IV | — |
| A2 | 0.5 | VT / BK | 2139 | Run/Crank Ignition 1 Voltage | IV | — |
| A3 | — | — | — | Not Occupied | — | — |
| A4 | 0.75 | BN / GN | 59 | Air Conditioning Compressor Clutch Control | IV | — |
| A5 | 0.75 | RD / VT | 7940 | Battery Positive Voltage | IV | — |
| A6 | 0.75 | GN | 8016 | Secondary Axle Motor Control | IV | — |
| B1 | 2.5 | YE | 6 | Starter Solenoid Crank Ignition Voltage | IV | — |
| B2 | 0.5 | YE / BK | 625 | Starter Enable Relay Control | IV | — |
| B3 | 0.5 | VT / GY | 8017 | Secondary Axle Motor Relay Control | IV | — |
| B4 - B5 | — | — | — | Not Occupied | — | — |
| B6 | 2.5 | RD / GY | 1342 | Battery Positive Voltage | IV | — |
| C1 | 0.5 | BU | 3017 | Fuel Heater Relay 1 Control | I | — |
| C2 | — | — | — | Not Occupied | — | — |
| C3 | 0.75 | BK | 6550 | Ground | I | — |
| C4 | 0.5 | WH / GY | 459 | Air Conditioning Compressor Clutch Relay Control | I | — |
| C5 | 0.5 | GN / BU | 3889 | Powertrain Sensor Bus Relay Control | I | — |
| C6 | 1 | VT / GN | 4320 | Powertrain Sensor Bus Enable | I | — |
| C7 - D1 | — | — | — | Not Occupied | — | — |
| D2 | 5 | RD / BU | 1842 | Battery Positive Voltage | III | — |
| E1 | 5 | RD / BU | 1542 | Battery Positive Voltage | III | — |
| E2 | 5 | RD / BN | 1742 | Battery Positive Voltage | III | — |
| F1 | 2.5 | YE / GN | 4358 | Starter Pinion Solenoid Voltage | II | — |
| F2 | 0.5 | YE / VT | 4325 | Starter Pinion Solenoid Actuator Relay Control | I | — |
| F3 | 0.5<br>0.75 | RD / BN<br>RD / BN | 440<br>440 | Battery Positive Voltage<br>Battery Positive Voltage | I<br>I | L84/ L87<br>LZ0 |
| F4 | 0.5 | YE | 5991 | Powertrain Relay Coil Control | I | — |
| F5 | 0.5 | RD / BN | 5940 | Battery Positive Voltage | I | — |
| F6 | — | — | — | Not Occupied | — | — |
| F7 | 0.5 | VT / BU | 5705 | Powertrain Main Relay Control | I | — |
| F8 | — | — | — | Not Occupied | — | — |
| G1 | 1 | VT / BU | 5294 | Powertrain Main Relay Fused Supply Voltage 5 | IV | — |
| G2 - G4 | — | — | — | Not Occupied | — | — |
| G5 | 1 | VT / GN | 4320 | Powertrain Sensor Bus Enable | IV | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| G6 | 0.75<br>2.5 | VT / BU<br>VT / BU | 5291<br>5291 | Powertrain Main Relay Fused Supply Voltage 2<br>Powertrain Main Relay Fused Supply Voltage 2 | IV<br>IV | L84/ L87<br>LZ0 |
| H1 | 2<br>2.5 | VT<br>VT / BU | 5290<br>5290 | Powertrain Main Relay Fused Supply Voltage 1<br>Powertrain Main Relay Fused Supply Voltage 1 | IV<br>IV | L84/ L87<br>LZ0 |
| H2 | 1 | VT / BU | 5292 | Powertrain Main Relay Fused Supply Voltage 3 | IV | — |
| H3 | 0.75 | VT / BU | 5294 | Powertrain Main Relay Fused Supply Voltage 5 | IV | — |
| H4 | 0.75 | VT / BU | 5293 | Powertrain Main Relay Fused Supply Voltage 4 | IV | — |
| H5 | 1 | VT / BU | 5291 | Powertrain Main Relay Fused Supply Voltage 2 | IV | — |
| H6 | 0.75 | VT / BU | 5290 | Powertrain Main Relay Fused Supply Voltage 1 | IV | — |

### X50A Engine Wiring Harness Junction Block X4



4993031

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33384574
- Service Connector: 19371188
- Description: 44-Way F 1.5, 2.8, 6.3 CTS, 9.5 MCON-LL Series( BK)

## Terminal Part Information

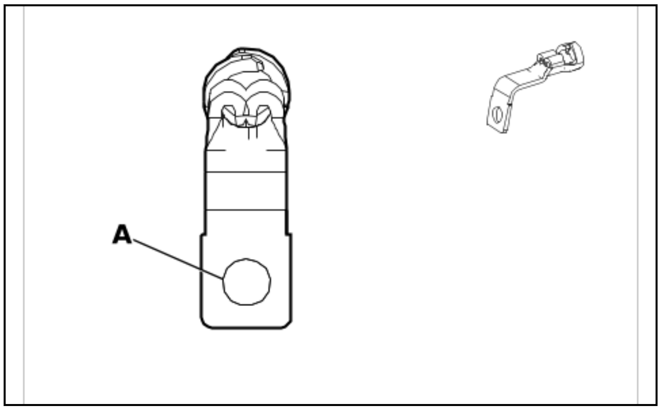
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84764079 | J-35616-22 (RD) | J-38125-11A |
| IV | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X50A Engine Wiring Harness Junction Block X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A1 - A2 | — | — | — | Not Occupied | — | — |
| A3 | 1.5 | BN | 2109 | Trailer Park Lamp Control | IV | — |
| A4 - A5 | — | — | — | Not Occupied | — | — |
| A6 | 0.75 | VT / BK | 339 | Run/Crank Ignition 1 Voltage | IV | — |
| B1 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| B2 | 0.75 | GY | 1624 | Trailer Backup Lamp Control | IV | — |
| B3 | 0.75 | RD / GN | 2440 | Battery Positive Voltage | IV | — |
| B4 - B6 | — | — | — | Not Occupied | — | — |
| C1 | 0.75 | RD / BN | 2940 | Battery Positive Voltage | I | — |
| C2 - C6 | — | — | — | Not Occupied | — | — |
| C7 | 0.5 | RD / WH | 2040 | Battery Positive Voltage | I | — |
| C8 | 3 | BN / YE | 2996 | Fuel Heater Control 1 | II | — |
| D1 | — | — | — | Not Occupied | — | — |
| D2 | 6 | RD / VT | 1242 | Battery Positive Voltage | III | — |
| E1 - E2 | — | — | — | Not Occupied | — | — |
| F1 | 3 | RD / BU | 7640 | Battery Positive Voltage | II | — |
| F2 - G2 | — | — | — | Not Occupied | — | — |
| G3 | 0.75 | YE | 1618 | Left Rear Trailer Stop/Turn Lamp Control | IV | — |
| G4 | 2 | RD / YE | 5840 | Battery Positive Voltage | IV | — |
| G5 | 2.5 | RD / WH | 3440 | Battery Positive Voltage | IV | — |
| G6 | 2.5 | RD / YE | 1142 | Battery Positive Voltage | IV | — |
| H1 - H2 | — | — | — | Not Occupied | — | — |
| H3 | 0.75 | GN | 1619 | Right Rear Trailer Stop/Turn Lamp Control | IV | — |
| H4 | 3 | RD / VT | 5640 | Battery Positive Voltage | IV | — |
| H5 | 2.5 | RD / VT | 1940 | Battery Positive Voltage | IV | — |
| H6 | 4 | OG | 742 | Battery Positive Voltage | IV | — |

### X50A Engine Wiring Harness Junction Block X5 (L84 / L87)



5525767

**Connector Part Information**

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386513
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

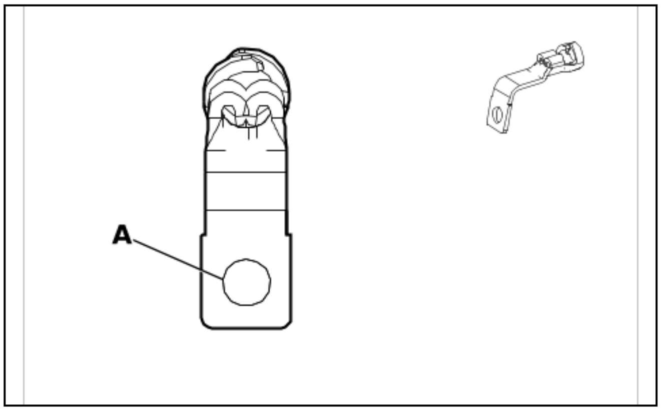
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | L84/ L87 |

## X50A Engine Wiring Harness Junction Block X5 (LZ0)



5525767

**Connector Part Information**

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84386513
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

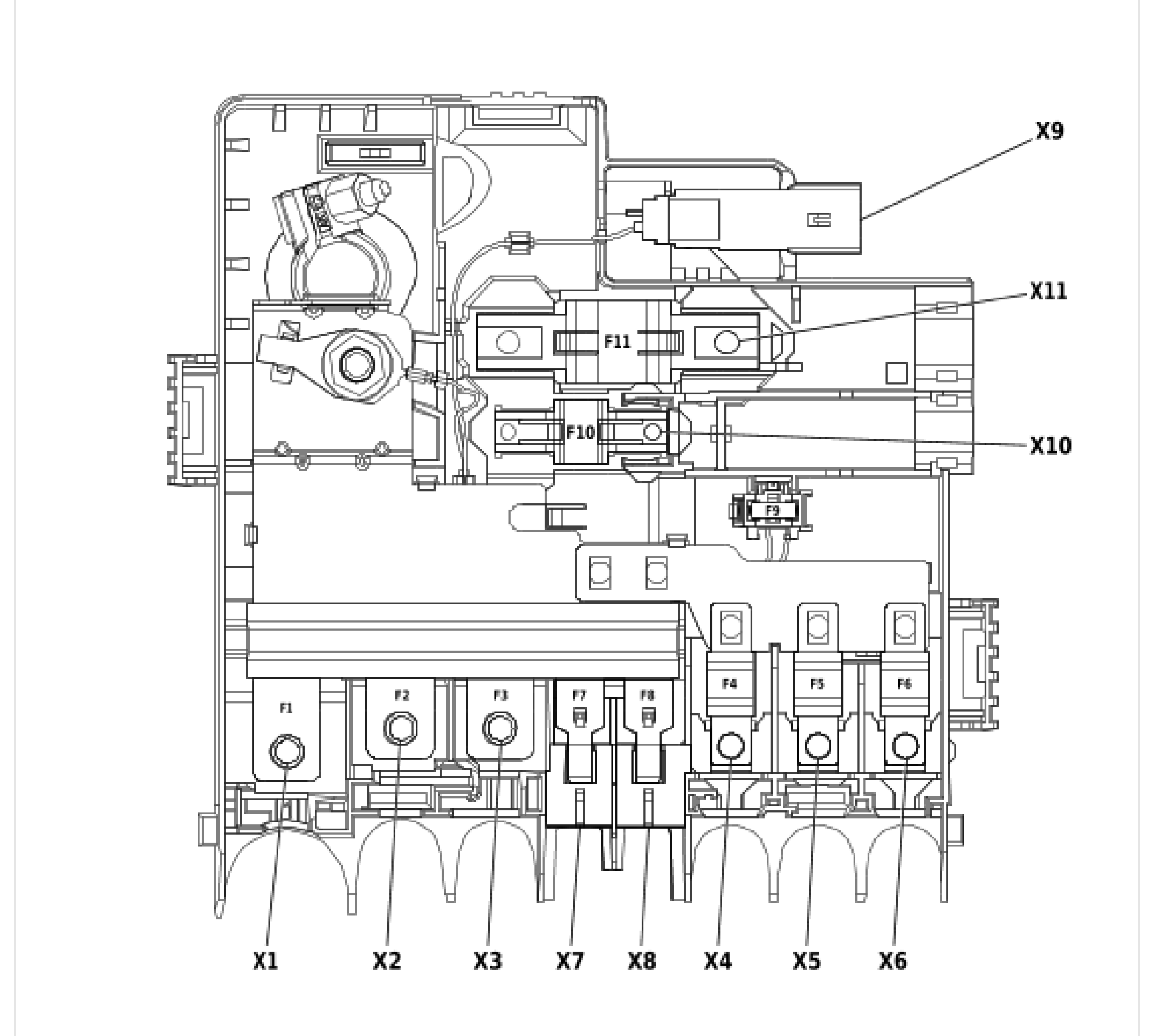
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50A Engine Wiring Harness Junction Block X5 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | LZ0 |

## X50B Battery Distribution Engine Compartment Fuse Block Top View


X9
X11
X10
F11
F10
F9
F1
F2
F3
F7
F8
F4
F5
F6
X1
X2
X3
X7
X8
X4
X5
X6

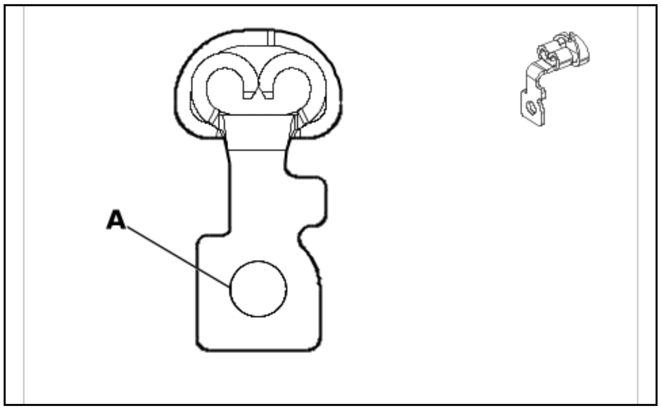
5070128

### Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | — | F1BA | 250A -(5W4/9C1)<br>275A (5W4/9C1) | • G13 Generator<br>• X50A Engine Wiring Harness Junction Block |
| F2 | — | F2BA | 175A | • K43 Power Steering Control Module |
| F3 | — | F3BA | 450A LZ0<br>400A (L84/ L87) | • M64 Starter Motor |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F4 | — | F4BA | 150A | • E40 Air Heater (C3A)<br>• X50EA Battery Distribution Fuse Block - Auxiliary (5W4/9C1) |
| F5 | — | F5BA | 70A | • K20 Engine Control Module (LZ0) |
| F6 | — | F6BA | 80A | • G10R Cooling Fan Motor - Right (LZ0) |
| F7 | — | F7BA | 60A | • X51R Instrument Panel Wiring Harness Junction Block - Right |
| F8 | — | F8BA | 60A | • K160 Brake System Control Module |
| F9 | — | F9BA | 5A | • B110 Battery Sensor Module |

### X50B Battery Distribution Engine Compartment Fuse Block X1 (L84 / L87)



5911326

**Connector Part Information**

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386516
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

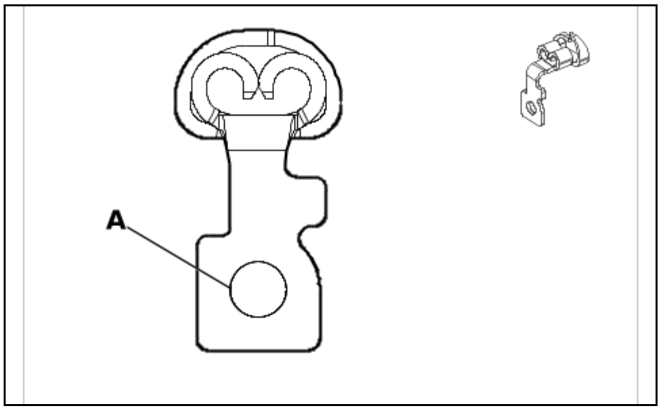
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X1 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | L84/ L87 |

### X50B Battery Distribution Engine Compartment Fuse Block X1 (LZ0)



5911326

**Connector Part Information**

- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84386516
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

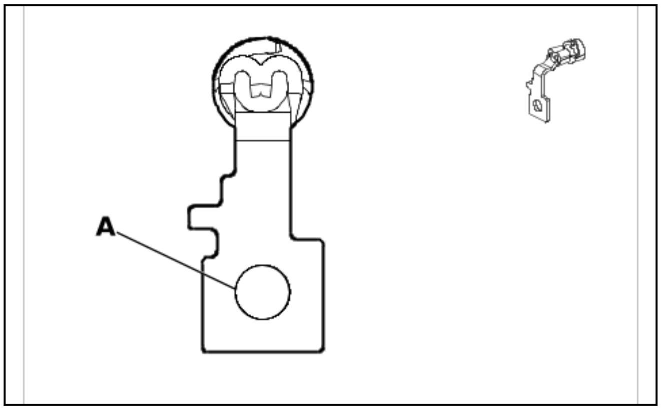
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X1 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | LZ0 |

### X50B Battery Distribution Engine Compartment Fuse Block X2



5664311

**Connector Part Information**

- Harness Type: Power Steering Wiring Harness
- OEM Connector: 84386514
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

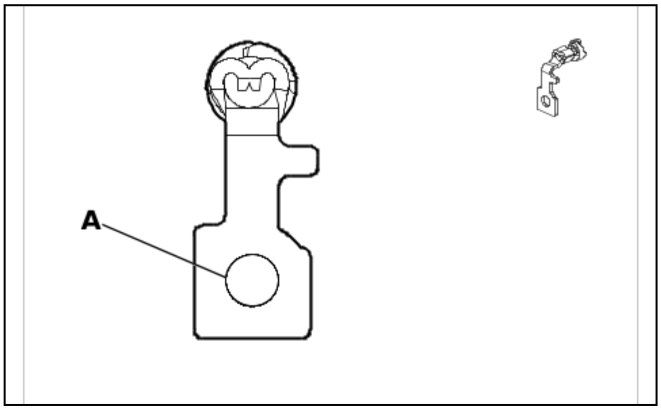
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / VT | 842 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X3



5881244

**Connector Part Information**
- Harness Type: Starter Solenoid Cable
- OEM Connector: 84386515
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

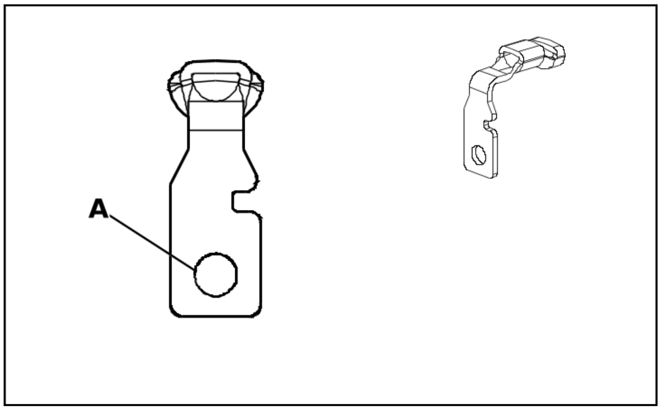
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / YE | 2 | Battery Positive Voltage | I | L84/ L87 |

### X50B Battery Distribution Engine Compartment Fuse Block X4



5194789

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 84385485
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

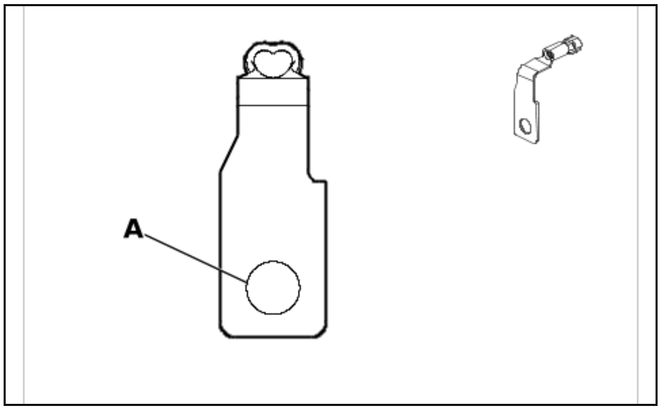
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 16 | RD / GY | 642 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X5



5373306

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 84472882
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

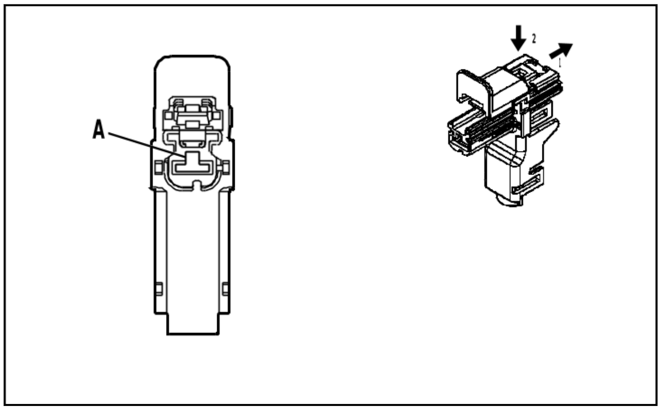
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 6 | BN / BU | 104 | Glow Plug Control | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X6 (5W4 / 9C1)



4994171

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33297579
- Service Connector: Pending
- Description: 1-Way F 6.3 Series( BU)

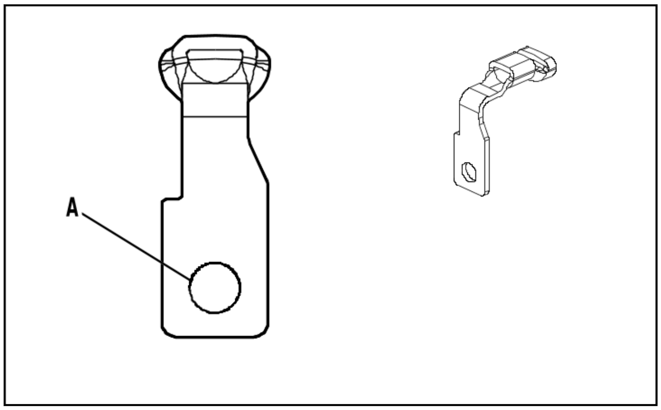
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X6 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 6 | RD / WH | 1642 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X6 (LZ0)



4994507

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35085183
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

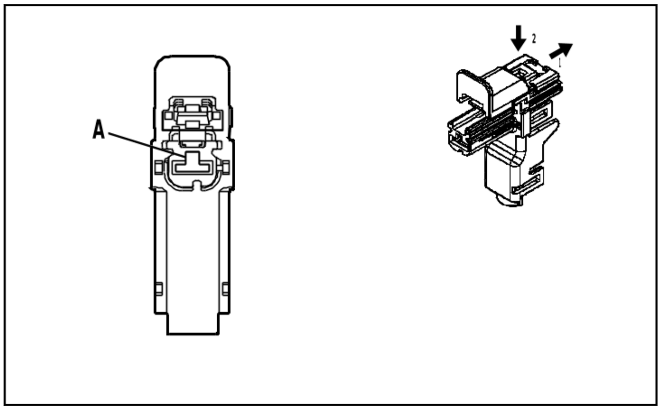
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X6 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 10 | RD / YE | 1442 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X7



4994183

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33297578
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 6.3 Series( BK)

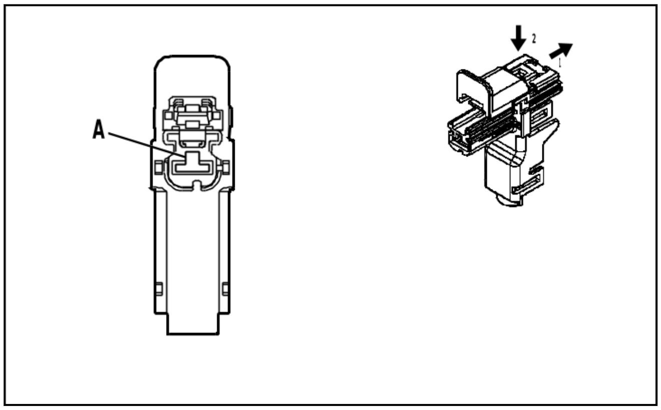
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 5 | RD / YE | 1442 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X8



4994171

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33297579
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 6.3 Series( BU)

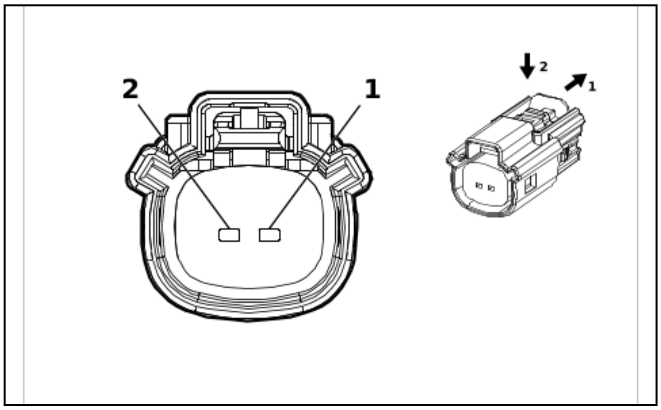
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 6 | RD / WH | 1642 | Battery Positive Voltage | I | — |

### X50B Battery Distribution Engine Compartment Fuse Block X9



2474713

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33471-0206
- Service Connector: 13577534
- Description: 2-Way F 1.5 Series, Sealed( BK)

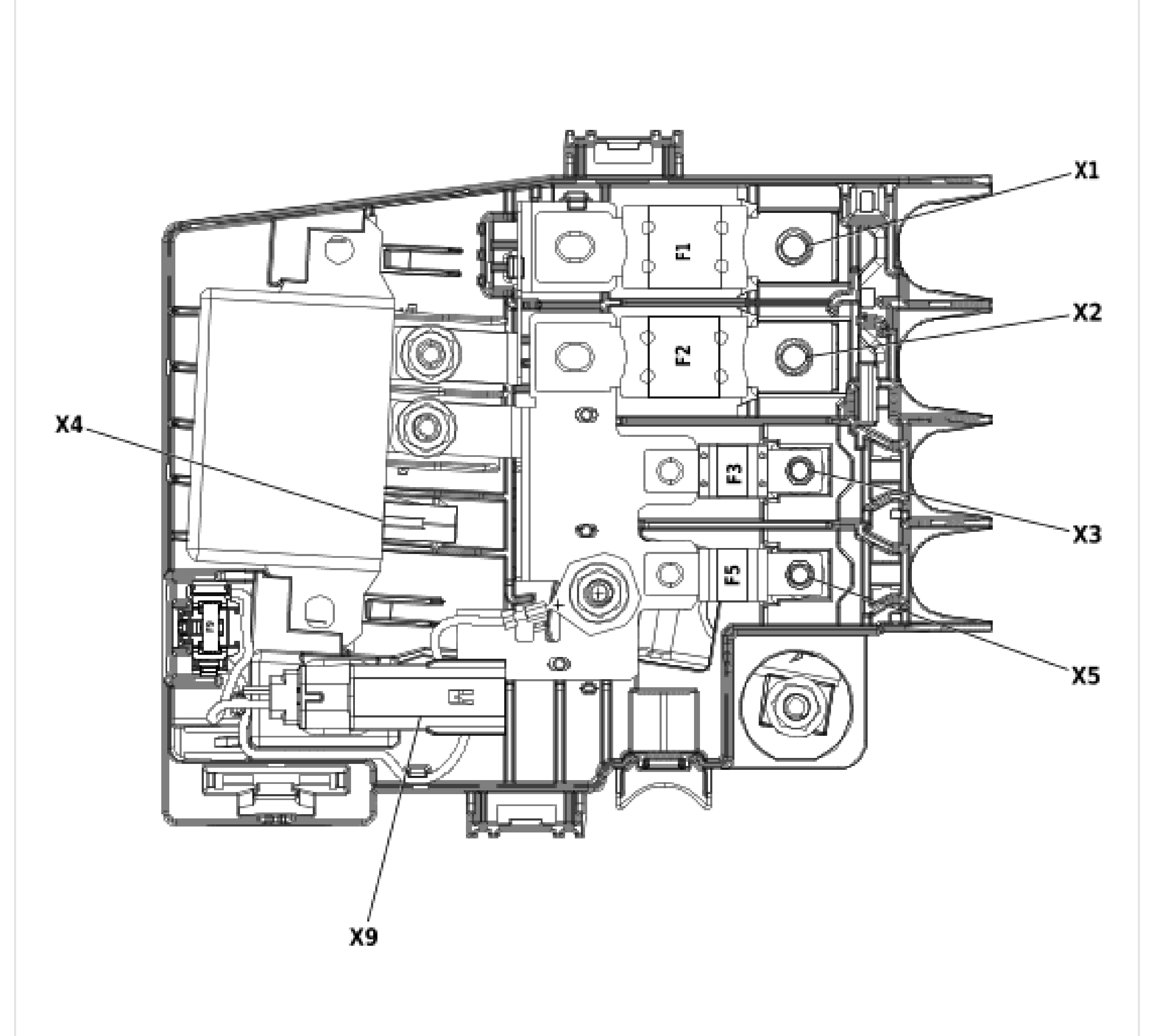
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## X50B Battery Distribution Engine Compartment Fuse Block X9

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

## X50EA Battery Distribution Fuse Block - Auxiliary Top View (5W4 / 9C1)



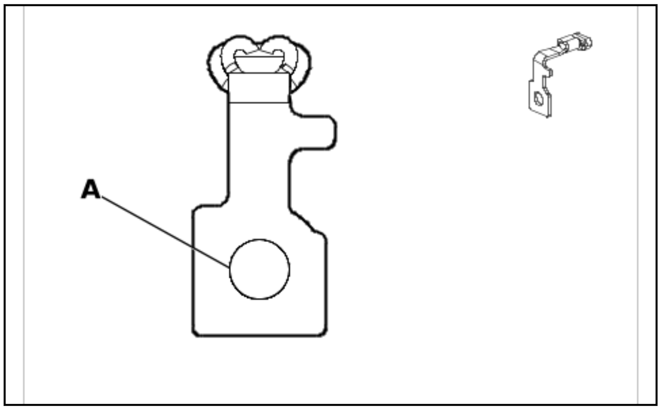
6665306

### Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F1 | — | F1BB | 100A | • KR81 Auxiliary Battery Relay |
| F2 | — | F2BB | 100A | • W12RCL Blunt Cut - Left Rear Cargo Trim |
| F3 | — | F3BB | 50A | • W12FC Blunt Cut - Front Seat/Center Console |
| F5 | — | F5BB | 60A | • X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary |
| F9 | — | F9BB | 5A | • B110AX Battery Monitor Module - Auxiliary |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Relays** | | | | |
| — | — | KR81 Auxiliary Battery Relay | — | • C1B Battery - Auxiliary<br>• F2BB<br>• F3BB<br>• F5BB<br>• F9BB |

### X50EA Battery Distribution Fuse Block - Auxiliary X1 (5W4 / 9C1)



5873864

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1130801
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

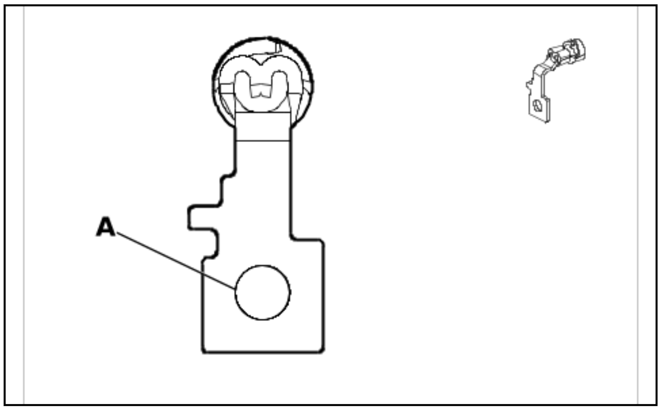
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X1 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 16 | RD / GY | 642 | Battery Positive Voltage | I | — |

### X50EA Battery Distribution Fuse Block - Auxiliary X2 (5W4 / 9C1)



5664311

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1122403
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

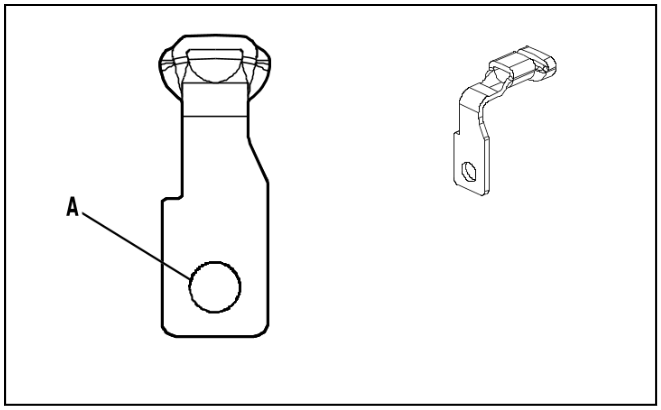
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X2 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 25 | RD / VT | 842 | Battery Positive Voltage | I | — |

### X50EA Battery Distribution Fuse Block - Auxiliary X3 (5W4 / 9C1)



4994507

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35085183
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

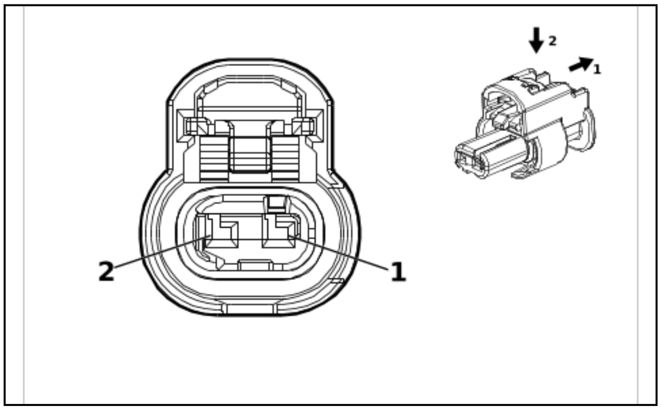
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X3 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 10 | RD / GN | 742 | Battery Positive Voltage | I | — |

### X50EA Battery Distribution Fuse Block - Auxiliary X4 (5W4 / 9C1)



4649903

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

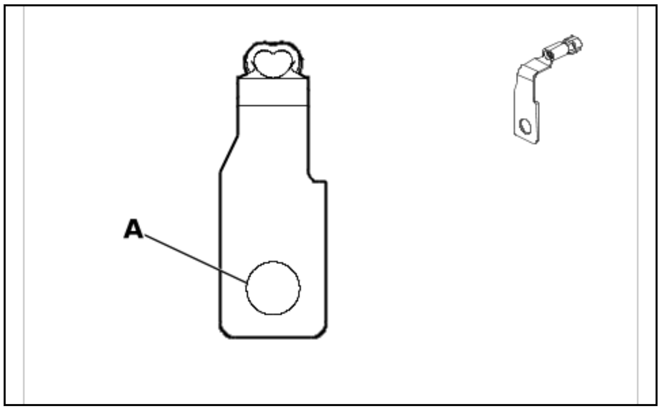
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X4 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 4892 | (1) Auxiliary Battery Relay Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BK | (2) 7650 | (2) Police Ground | (2) II | (2) — |

### X50EA Battery Distribution Fuse Block - Auxiliary X5 (5W4 / 9C1)



5373306

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 84472882
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

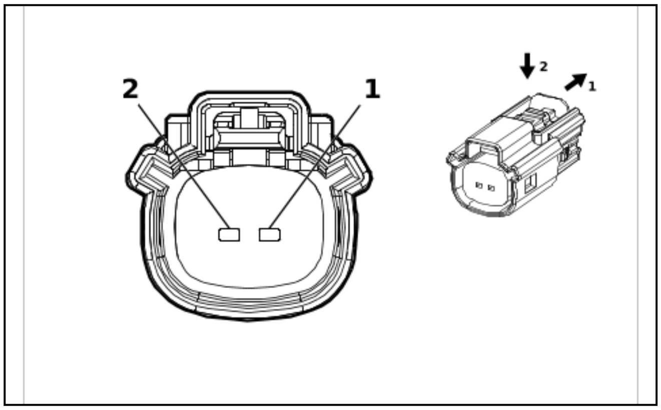
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X5 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 6 | RD / GY | 2742 | Battery Positive Voltage | I | — |

### X50EA Battery Distribution Fuse Block - Auxiliary X9 (5W4 / 9C1)



2474713

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33471-0206
- Service Connector: 13577534
- Description: 2-Way F 1.5 Series, Sealed( BK)

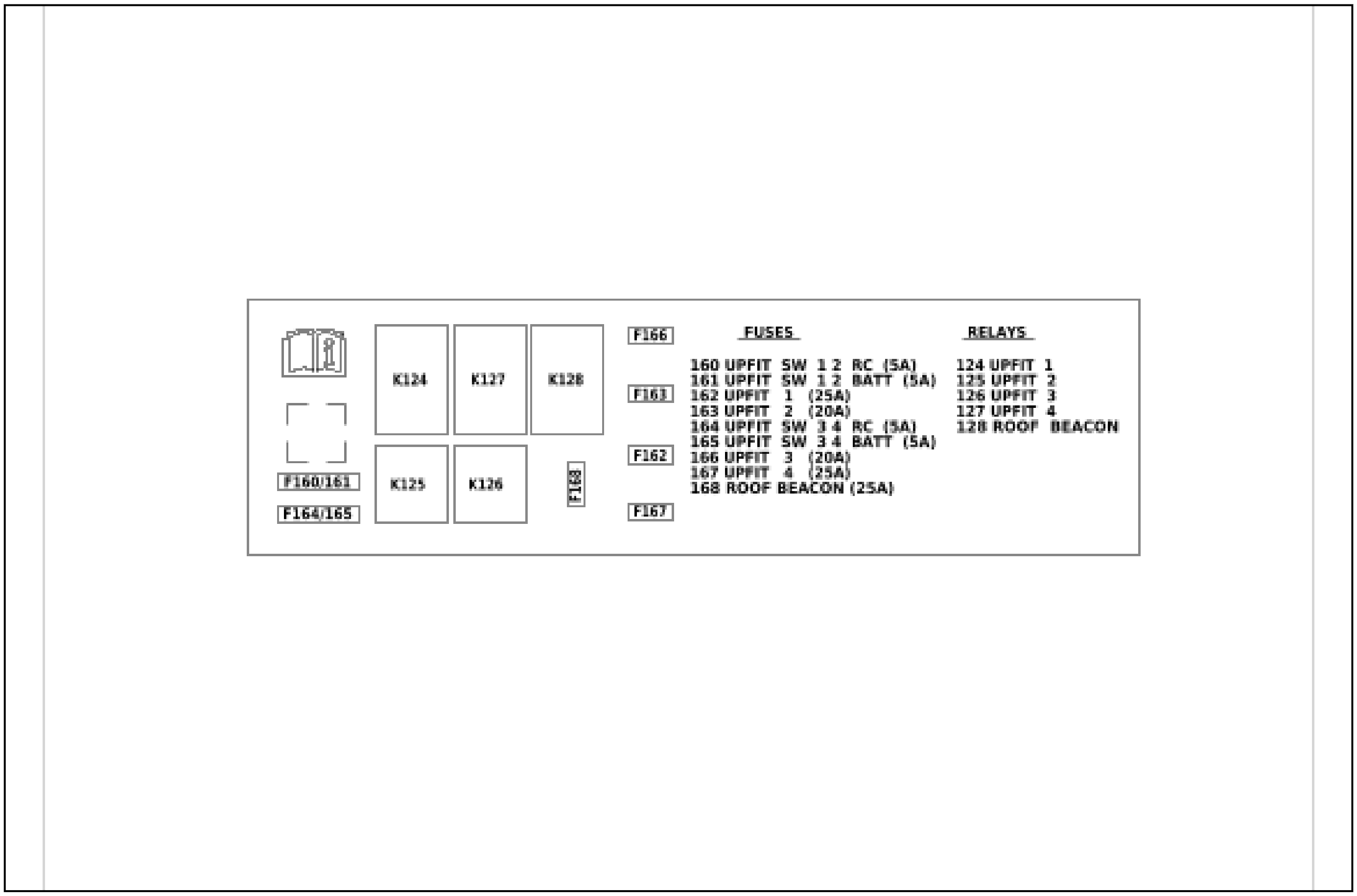
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## X50EA Battery Distribution Fuse Block - Auxiliary X9 (5W4 / 9C1)

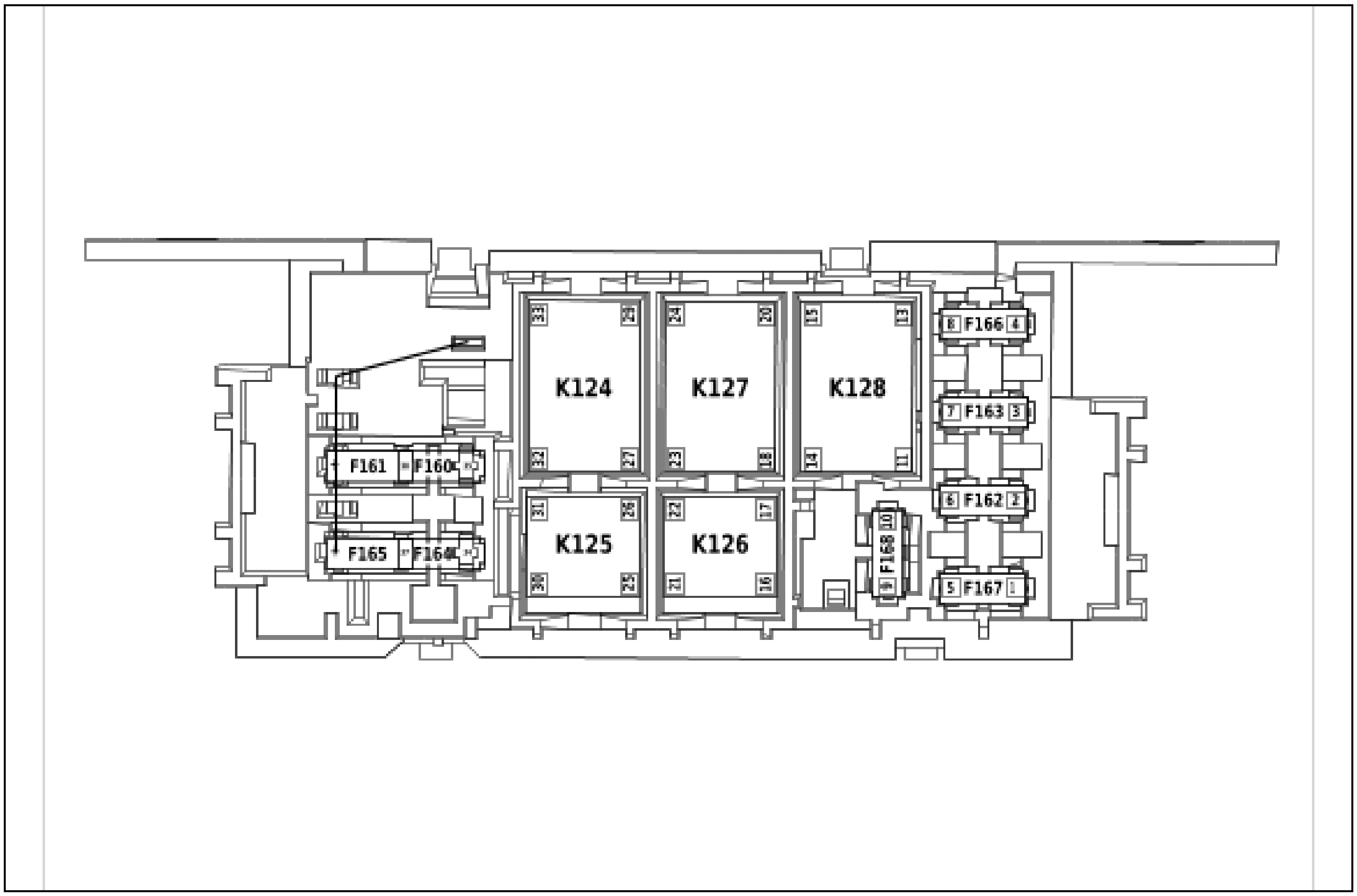
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

### X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Label (5W4 / 9C1)


K124
K127
K128
K125
K126
F160/161
F164/165
F168
F166
F163
F162
F167
FUSES
160 UPFIT SW 1 2 RC (5A)
161 UPFIT SW 1 2 BATT (5A)
162 UPFIT 1 (25A)
163 UPFIT 2 (20A)
164 UPFIT SW 3 4 RC (5A)
165 UPFIT SW 3 4 BATT (5A)
166 UPFIT 3 (20A)
167 UPFIT 4 (25A)
168 ROOF BEACON (25A)
RELAYS
124 UPFIT 1
125 UPFIT 2
126 UPFIT 3
127 UPFIT 4
128 ROOF BEACON

5573254

## X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary Top View (5W4 / 9C1)


K124
33
29
32
27
K127
24
20
23
18
K128
15
13
14
11
K125
31
26
30
25
K126
22
17
21
16
F161
F160
F165
F164
8 F166 4
7 F163 3
6 F162 2
5 F167 1
10 F168 9

5245414

### Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F160 | UPFIT SW 1-2 RC | F160DA | 5A | • KR161A Configurable Provision Relay 1<br>• KR161B Configurable Provision Relay 2 |
| F161 | UPFIT SW 1-2 BATT | F161DA | 5A | • Not Used |
| F162 | UPFIT1 | F162DA | 25A | • W12FC Blunt Cut - Front Seat/Center Console |
| F163 | UPFIT2 | F163DA | 20A | • W12FC Blunt Cut - Front Seat/Center Console |
| F164 | UPFIT SW 3-4 RC | F164DA | 5A | • KR161C Configurable Provision Relay 3<br>• KR161D Configurable Provision Relay 4 |
| F165 | UPFIT SW 3-4 BATT | F165DA | 5A | • Not Used |
| F166 | UPFIT3 | F166DA | 20A | • W12RCL Blunt Cut - Left Rear Cargo Trim |
| F167 | UPFIT4 | F167DA | 25A | • W12RCL Blunt Cut - Left Rear Cargo Trim |
| **Relays** | | | | |
| K124 | UPFIT1 | KR161A Configurable Provision Relay 1 | — | • F162DA |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| K125 | UPFIT2 | KR161B Configurable Provision Relay 2 | — | • F163DA |
| K126 | UPFIT3 | KR161C Configurable Provision Relay 3 | — | • F166DA |
| K127 | UPFIT4 | KR161D Configurable Provision Relay 4 | — | • F167DA |
| K128 | ROOF BEACON | — | — | • Not Used |

### X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (5W4 / 9C1)

—

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 33323307
- Service Connector: Service by Component Assembly - See Part Catalog
- Description: Wire Entry Fuse Block

## Terminal Part Information

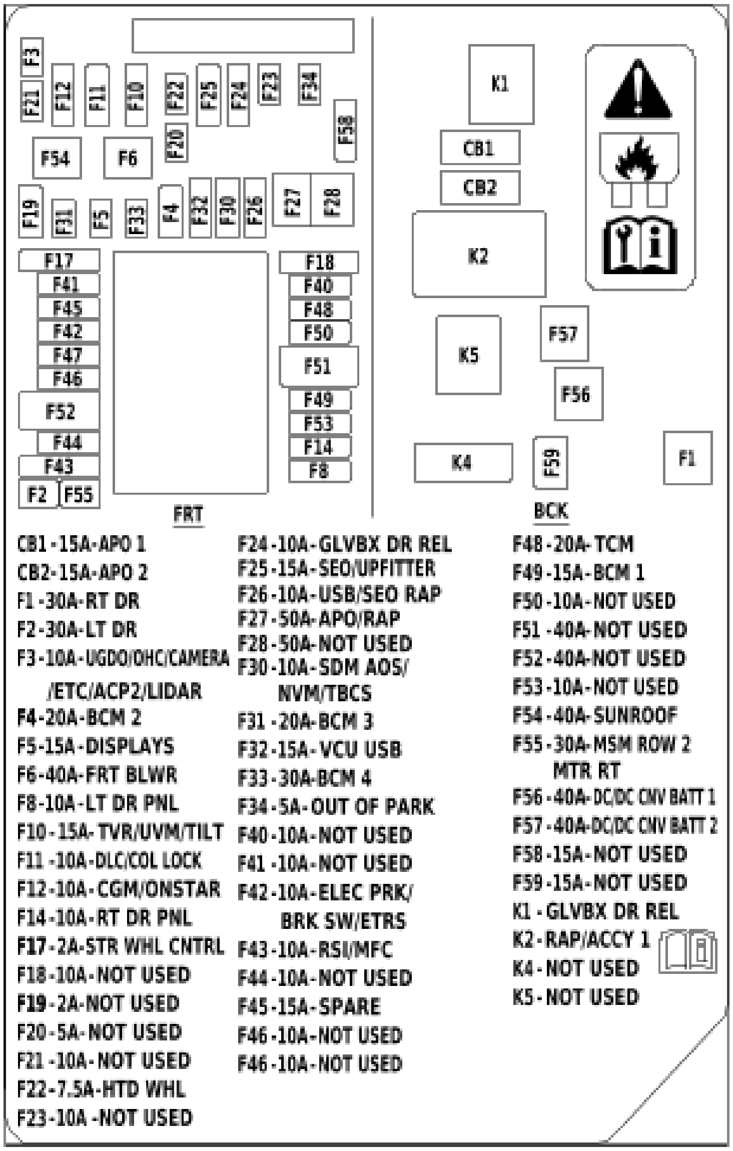
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332366 | J-35616-35 (VT) | J-38125-212 |
| II | 84764079 | J-35616-22 (RD) | J-38125-11A |

## X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) RD / YE | (1) 8914 | (1) Police Select Control 4 | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) RD / GN | (2) 8911 | (2) Police Select Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) RD / GY | (3) 8912 | (3) Police Select Control 2 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) RD / WH | (4) 8913 | (4) Police Select Control 3 | (4) I | (4) — |
| (5) 5 | (5) 1 | (5) RD / BU | (5) 8908 | (5) Police Select Fuse Supply Voltage 4 | (5) I | (5) — |
| (6) 6 | (6) 1 | (6) RD / BN | (6) 8905 | (6) Police Select Fuse Supply Voltage 1 | (6) I | (6) — |
| (7) 7 | (7) 1 | (7) RD / BN | (7) 8906 | (7) Police Select Fuse Supply Voltage 2 | (7) I | (7) — |
| (8) 8 | (8) 1 | (8) RD / BU | (8) 8907 | (8) Police Select Fuse Supply Voltage 3 | (8) I | (8) — |
| (16) 16 | (16) 0.75 | (16) RD / GY | (16) 2742 | (16) Battery Positive Voltage | (16) I | (16) — |
| (17) 17 | (17) 0.75 | (17) GY / YE | (17) 8897 | (17) Police Relay 3 Control | (17) I | (17) — |
| (18) 18 | (18) 1 | (18) RD / BU | (18) 8908 | (18) Police Select Fuse Supply Voltage 4 | (18) I | (18) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (20) 20 | (20) 0.5 | (20) RD / VT | (20) 8910 | (20) Police Select Relay Supply Voltage 2 | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) RD / VT | (21) 8910 | (21) Police Select Relay Supply Voltage 2 | (21) I | (21) — |
| (22) 22 | (22) 1 | (22) RD / BU | (22) 8907 | (22) Police Select Fuse Supply Voltage 3 | (22) I | (22) — |
| (23) 23 | (23) 0.75 | (23) VT / YE | (23) 8898 | (23) Police Relay 4 Control | (23) I | (23) — |
| (24) 24 | (24) 0.75 | (24) RD / GY | (24) 2742 | (24) Battery Positive Voltage | (24) I | (24) — |
| (25) 25 | (25) 1 | (25) RD / GY | (25) 2742 | (25) Battery Positive Voltage | (25) I | (25) — |
| (26) 26 | (26) 0.75 | (26) GN / YE | (26) 8896 | (26) Police Relay 2 Control | (26) I | (26) — |
| (27) 27 | (27) 1 | (27) RD / BN | (27) 8905 | (27) Police Select Fuse Supply Voltage 1 | (27) I | (27) — |
| (29) 29 | (29) 0.5 | (29) RD / VT | (29) 8909 | (29) Police Select Relay Supply Voltage 1 | (29) I | (29) — |
| (30) 30 | (30) 0.5 | (30) RD / VT | (30) 8909 | (30) Police Select Relay Supply Voltage 1 | (30) I | (30) — |
| (31) 31 | (31) 1 | (31) RD / BN | (31) 8906 | (31) Police Select Fuse Supply Voltage 2 | (31) I | (31) — |
| (32) 32 | (32) 0.75 | (32) BU / YE | (32) 8895 | (32) Police Relay 1 Control | (32) I | (32) — |
| (33) 33 | (33) 1 | (33) RD / GY | (33) 2742 | (33) Battery Positive Voltage | (33) I | (33) — |
| (34) 34 | (34) 0.5 | (34) VT / WH | (34) 239 | (34) Run/Crank Ignition 1 Voltage | (34) I | (34) — |
| (35) 35 | (35) 0.5 | (35) VT / WH | (35) 239 | (35) Run/Crank Ignition 1 Voltage | (35) I | (35) — |
| (36) 36 | (36) 5 | (36) RD / GY | (36) 2742 | (36) Battery Positive Voltage | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) RD / VT | (37) 8910 | (37) Police Select Relay Supply Voltage 2 | (37) I | (37) — |
| (38) 38 | (38) 0.5 | (38) RD / VT | (38) 8909 | (38) Police Select Relay Supply Voltage 1 | (38) I | (38) — |
| (39) 39 | (39) 1 | (39) RD / GY | (39) 2742 | (39) Battery Positive Voltage | (39) I | (39) — |
| (40) 40 | (40) 0.75 | (40) RD / GY | (40) 2742 | (40) Battery Positive Voltage | (40) I | (40) — |
| (42) 42 | (42) 0.75 | (42) RD / GY | (42) 2742 | (42) Battery Positive Voltage | (42) I | (42) — |
| (43) 43 | (43) 1 | (43) RD / GY | (43) 2742 | (43) Battery Positive Voltage | (43) I | (43) — |

## X51R Instrument Panel Wiring Harness Junction Block - Right Label


F3
F21
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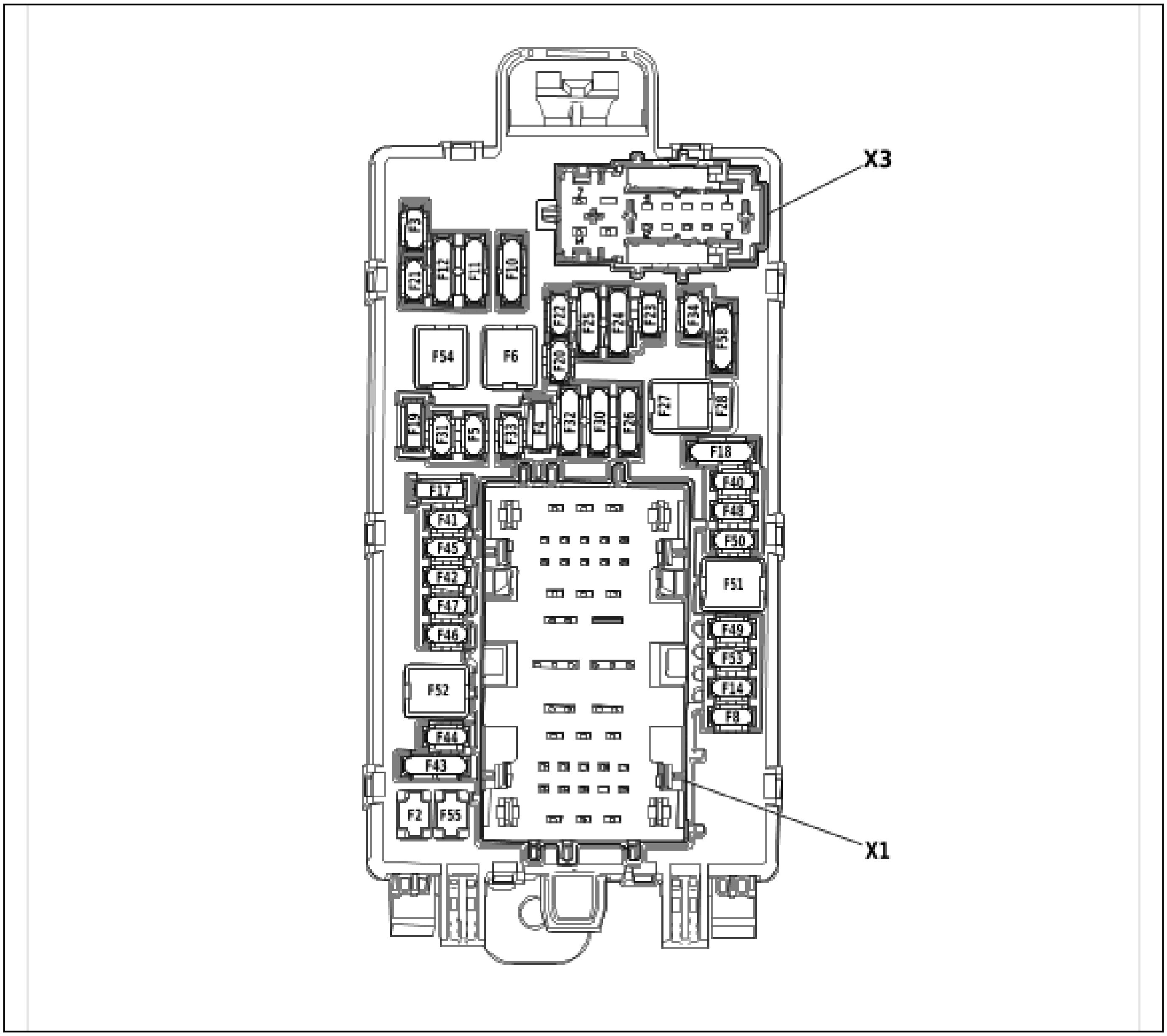
F52
F44
F43
F2
F55
F18
F40
F48
F50
F51
F49
F53
F14
F8
FRT
K1
CB1
CB2
K2
K5
F57
F56
K4
F59
F1
BCK

CB1 - 15A - APO 1
CB2 - 15A - APO 2
F1 - 30A - RT DR
F2 - 30A - LT DR
F3 - 10A - UGDO/OHC/CAMERA /ETC/ACP2/LIDAR
F4 - 20A - BCM 2
F5 - 15A - DISPLAYS
F6 - 40A - FRT BLWR
F8 - 10A - LT DR PNL
F10 - 15A - TVR/UVM/TILT
F11 - 10A - DLC/COL LOCK
F12 - 10A - CGM/ONSTAR
F14 - 10A - RT DR PNL
F17 - 2A - STR WHL CNTRL
F18 - 10A - NOT USED
F19 - 2A - NOT USED
F20 - 5A - NOT USED
F21 - 10A - NOT USED
F22 - 7.5A - HTD WHL
F23 - 10A - NOT USED
F24 - 10A - GLVBX DR REL
F25 - 15A - SEO/UPFITTER
F26 - 10A - USB/SEO RAP
F27 - 50A - APO/RAP
F28 - 50A - NOT USED
F30 - 10A - SDM AOS/ NVM/TBCS
F31 - 20A - BCM 3
F32 - 15A - VCU USB
F33 - 30A - BCM 4
F34 - 5A - OUT OF PARK
F40 - 10A - NOT USED
F41 - 10A - NOT USED
F42 - 10A - ELEC PRK/ BRK SW/ETRS
F43 - 10A - RSI/MFC
F44 - 10A - NOT USED
F45 - 15A - SPARE
F46 - 10A - NOT USED
F46 - 10A - NOT USED
F48 - 20A - TCM
F49 - 15A - BCM 1
F50 - 10A - NOT USED
F51 - 40A - NOT USED
F52 - 40A - NOT USED
F53 - 10A - NOT USED
F54 - 40A - SUNROOF
F55 - 30A - MSM ROW 2 MTR RT
F56 - 40A - DC/DC CNV BATT 1
F57 - 40A - DC/DC CNV BATT 2
F58 - 15A - NOT USED
F59 - 15A - NOT USED
K1 - GLVBX DR REL
K2 - RAP/ACCY 1
K4 - NOT USED
K5 - NOT USED

6665307

## X51R Instrument Panel Wiring Harness Junction Block - Right Top View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F41
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F42
F51
F47
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F49
F53
F52
F14
F8
F44
F43
F2
F55
X1

5041376

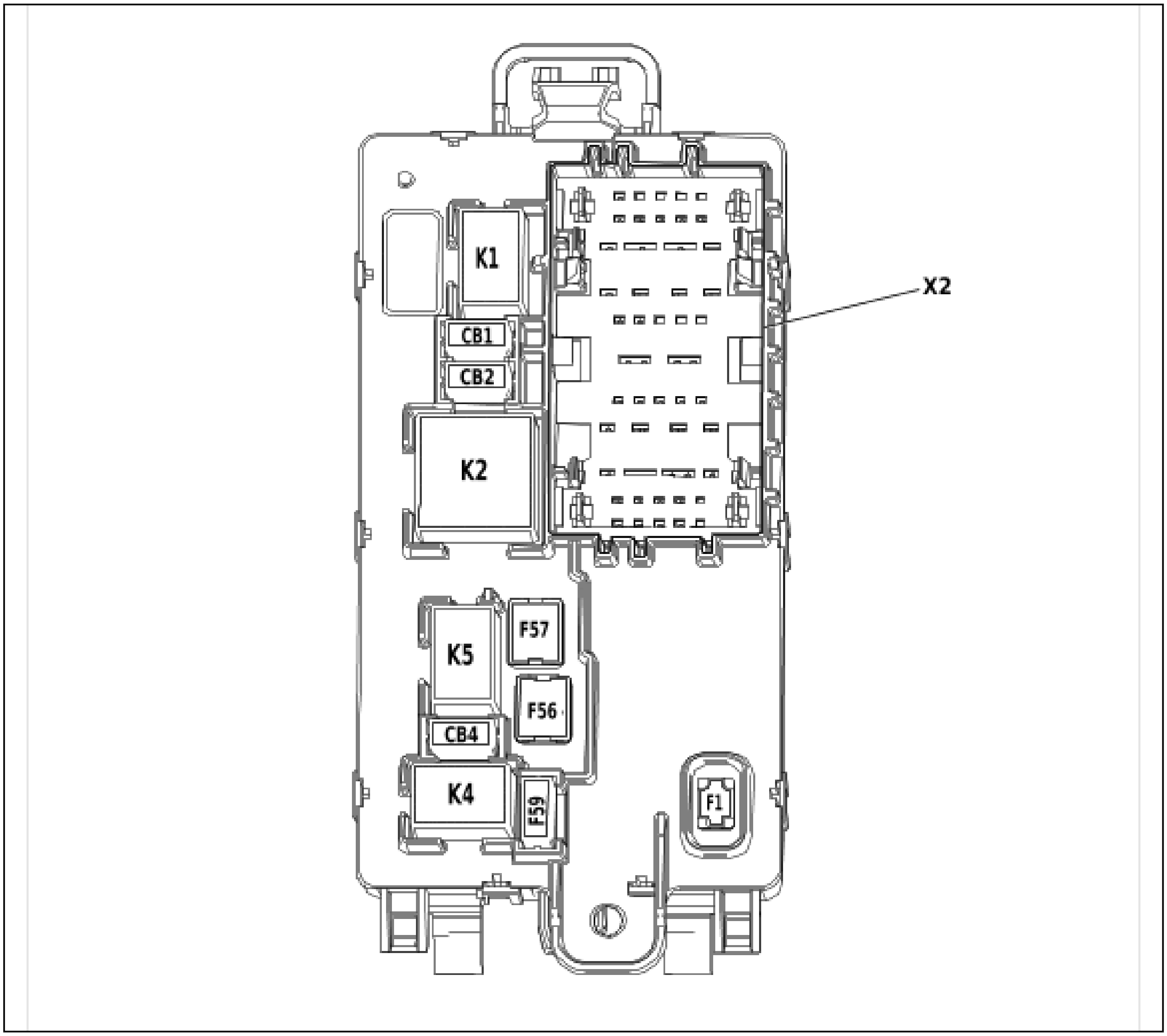
### Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F2 | LT DR | F2DR | 30A | • M74D Front Side Door Window Regulator Motor - Driver<br>• S79LR Rear Side Door Window Switch - Left |
| F3 | UGDO/OHC/ CAMERA/ETC/ ACP2/LIDAR | F3DR | 10A | • A103 Roof Console<br>• B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor<br>• B174W Front View Camera - Windhsield<br>• E104 Emergency Vehicle Reading Lamp (5W4/9C1) |
| F4 | BCM 2 | F4DR | 20A | • K9 Body Control Module |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F5 | DISPLAYS | F5DR | 15A | • A22 Radio Control<br>• P16 Instrument Panel Cluster Control Module<br>• P29 Head-up Display (UV6) |
| F6 | FRT BLWR | F6DR | 40A | • M8 Blower Motor |
| F8 | LT DR PNL | F8DR | 10A | • A24D Front Side Door Outside Handle - Left (BOR/BOY)<br>• S79D Front Side Door Window Control Switch - Driver |
| F10 | TVR/UVM/TILT | F10DR | 15A | • K56U Special Purpose Vehicle Control Module (KGU)<br>• K99 Steering Column Tilt Wheel and Telescope Control Module (N38)<br>• X20 Card Reader Receptacle |
| F11 | DLC/COL LOCK | F11DR | 10A | • K60 Column Lock Module<br>• X84 Data Link Connector |
| F12 | CGM/ONSTAR | F12DR | 10A | • K56 Serial Data Gateway Module<br>• K73 Telematic Control Module |
| F14 | RT DOOR PNL | F14DR | 10A | • S79P Front Side Door Window Switch - Passenger |
| F17 | STR WHL CNTRL | F17DR | 2A | • K180S Driver Monitoring System Module - Steering Wheel (UKL)<br>• S70R Radio Control Switch - Steering Wheel |
| F18 | NOT USED | F18DR | 10A | • Not Used |
| F19 | NOT USED | F19DR | 2A | • Not Used |
| F20 | NOT USED | F20DR | 5A | • Not Used |
| F21 | NOT USED | F21DR | 10A | • Not Used |
| F22 | HTD WHL | F22DR | 7.5A | • K32 Steering Wheel Heating Control Module (KI3-UKL)<br>• K180S Driver Monitoring System Module - Steering Wheel (UKL) |
| F23 | NOT USED | F23DR | 10A | • Not Used |
| F24 | GLVBX DR REL | F24DR | 10A | • Not Used |
| F25 | SEO/UPFITTER | F25DR | 15A | • E35L Spot Lamp - Left (5W4/9C1)<br>• E35R Spot Lamp - Right (5W4/9C1) |
| F26 | USB/SEO RAP | F26DR | 10A | • W12FC Blunt Cut - Front Seat/Center Console (5W4/9C1)<br>• W12RCL Blunt Cut - Left Rear Cargo Trim (5W4/9C1)<br>• X92BCL USB Receptacle - 3rd Row Seat Left<br>• X92BCR USB Receptacle - 3rd Row Seat Right<br>• X92CD Dual Charge Only Receptacle - Floor Console Rear |
| F27 | APO/RAP | F27DR | 50A | • CB1DR<br>• CB2DR |
| F28 | NOT USED | F28DR | 50A | • Not Used |
| F30 | SDM AOS/DMS/NVM/TBCS | F30DR | 10A | • K36 Restraints Control Module<br>• K85P Restraints Occupant Classification System Module - Passenger<br>• S76 Trailer Brake Control Switch (JL1) |
| F31 | BCM 3 | F31DR | 20A | • K9 Body Control Module |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F32 | VCU USB | F32DR | 15A | • A11 Radio<br>• X92CF USB 2 Port Receptacle - Floor Console Front (-AZ3)<br>• X92IP USB 2 Port Receptacle - Instrument Panel (AZ3) |
| F33 | BCM 4 | F33DR | 30A | • K9 Body Control Module |
| F34 | OUT OF PARK | F34DR | 5A | • KR87 Transmission Park Position Relay |
| F40 | NOT USED | F40DR | 10A | • Not Used |
| F41 | NOT USED | F41DR | 10A | • Not Used |
| F42 | ELEC PRK/BRK SW/ETRS | F42DR | 10A | • S3B Automatic Transmission Electronic Control<br>• S91 Parking Brake Control Switch |
| F43 | RSI/MFC | F43DR | 10A | • K299R Audio/Video Interface Rear Module (UW9)<br>• P22E Video Display - Left Front Seat Back (UW9)<br>• P22F Video Display - Right Front Seat Back (UW9)<br>• X23 Multimedia Receptacle (UBC)<br>• X83B Audio/Video Receptacle (UW9) |
| F44 | NOT USED | F44DR | 10A | • Not Used |
| F45 | SPARE | F45DR | 15A | • Not Used |
| F46 | NOT USED | F46DR | 10A | • Not Used |
| F47 | NOT USED | F47DR | 10A | • Not Used |
| F48 | TCM | F48DR | 20A | • K71 Transmission Control Module |
| F49 | BCM 1 | F49DR | 15A | • K9 Body Control Module |
| F50 | NOT USED | F50DR | 10A | • Not Used |
| F51 | NOT USED | F51DR | 40A | • Not Used |
| F52 | NOT USED | F52DR | 40A | • Not Used |
| F53 | NOT USED | F53DR | 10A | • Not Used |
| F54 | SUNROOF | F54DR | 40A | • K61 Sunroof Control Module (C3U) |
| F55 | MSM ROW 2 MTR RT | F55DR | 30A | • Not Used |
| F56 | DC/DC CNV BATT 1 | F56DR | 40A | • T19 Multifunction Power Supply Converter |
| F57 | DC/DC CNV BATT 2 | F57DR | 40A | • T19 Multifunction Power Supply Converter |
| F58 | NOT USED | F58DR | 15A | • Not Used |
| **Relays** | | | | |
| **Note: Relays listed below are non-serviceable Printed Circuit Board (PCB) relays and are internal to the block.** | | | | |
| — | — | KR87 Transmission Park Position Relay | — | • S143L Rear Seat Back Folding Switch - 2nd Row Left (ATN/ATT)<br>• S143R Rear Seat Back Folding Switch - 2nd Row Right (ATN/ATT)<br>• S144A Rear Seat Back Folding Siwtch - 2nd Row Rear Compartment (ATN/ATT)<br>• W12FC Blunt Cut - Front Seat/Center Console (5W4/9C1)<br>• W12RCL Blunt Cut - Left Rear Cargo Trim (5W4/9C1) |

### X51R Instrument Panel Wiring Harness Junction Block - Right Bottom View



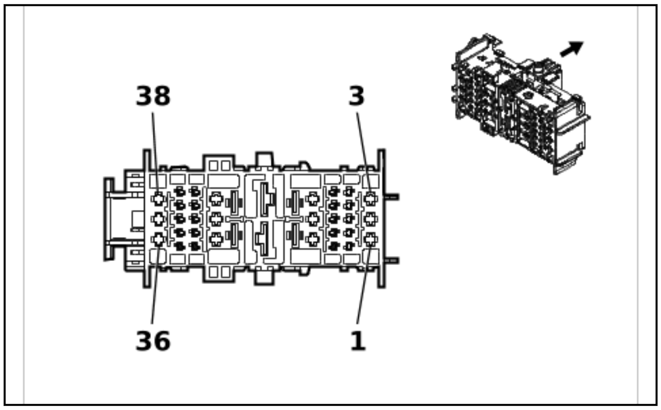
5619643

### Usage Table

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Circuit Breakers** | | | | |
| CB1 | APO 1 | CB1DR | 15A | • Not Used |
| CB2 | APO 2 | CB2DR | 15A | • Not Used |
| **Fuses** | | | | |
| F1 | RT DR | F1DR | 30A | • M74P Front Side Door Window Regulator Motor - Passenger<br>• S79RR Rear Side Door Window Switch - Right |
| F56 | DC/DC CNV BATT 1 | F56DR | 40A | • T19 Multifunction Power Supply Converter |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F57 | DC/DC CNV BATT 2 | F57DR | 40A | • T19 Multifunction Power Supply Converter |
| F59 | NOT USED | F59DR | 15A | • Not Used |
| **Relays** | | | | |
| K1 | GLVBX DR REL | — | — | • Not Used |
| K2 | RAP/ACCY 1 | KR76A Accessory Time Delay Cutoff Relay 1 | — | • F26DR<br>• F27DR |
| K4 | NOT USED | — | — | • Not Used |
| K5 | NOT USED | — | — | • Not Used |

### X51R Instrument Panel Wiring Harness Junction Block - Right X1



5402140

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35729471
- Service Connector: 85791494
- Description: 38-Way F 1.5, 2.8, 6.3 MCP, 9.5 MCON-LL Series( BU)

## Terminal Part Information

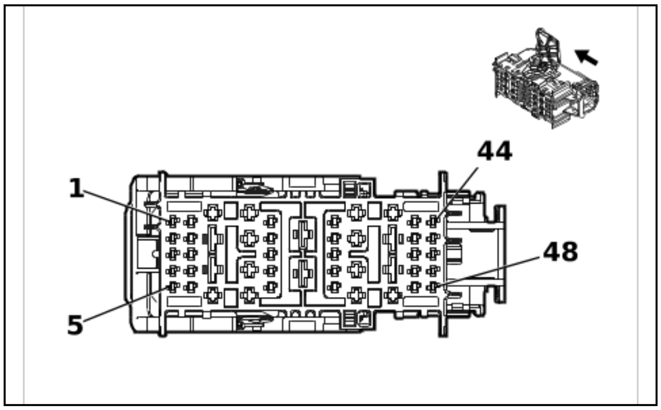
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332366 | J-35616-35 (VT) | J-38125-212 |
| II | 19371175 | J-35616-2A (GY) | EL-38125-560A |
| III | 84764078 | J-35616-42 (RD) | J-38125-221 |
| IV | 84764079 | J-35616-22 (RD) | J-38125-11A |
| V | Not required | J-35616-22 (RD) | No Tool Required |

## X51R Instrument Panel Wiring Harness Junction Block - Right X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) RD / GN | (3) 1840 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) RD / GN | (5) 4440 | (5) Battery Positive Voltage | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) VT | (6) 4701 | (6) Retained Accessory Power Control | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) VT | (7) 2801 | (7) Retained Accessory Power Control | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) VT | (8) 4701 | (8) Retained Accessory Power Control | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) GY / GN | (10) 4083 | (10) Retained Accessory Power Relay 2 Coil Control | (10) II | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) YE / BK | (13) 5813 | (13) Park Enable Control | (13) II | (13) — |
| 14 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 2.5 | (17) RD / YE | (17) 2172 | (17) 12V Regulated Supply Voltage 1 | (17) III | (17) — |
| (18) 18 | (18) 2.5 | (18) RD / YE | (18) 8140 | (18) Battery Positive Voltage | (18) III | (18) — |
| (19) 19 | (19) 5 | (19) RD / YE | (19) 1442 | (19) Battery Positive Voltage | (19) IV | (19) — |
| (20) 20 | (20) 10 | (20) RD / WH | (20) 342 | (20) Battery Positive Voltage | (20) V | (20) — |
| (21) 21 | (21) 2.5 | (21) RD / GN | (21) 2173 | (21) 12V Regulated Supply Voltage 2 | (21) III | (21) — |
| (22) 22 | (22) 2.5 | (22) RD / WH | (22) 8040 | (22) Battery Positive Voltage | (22) III | (22) — |
| (23) 23 | (23) 2.5 | (23) RD / BN | (23) 4240 | (23) Battery Positive Voltage | (23) I | (23) — |
| (24) 24 | (24) 2.5 | (24) RD / BN | (24) 4240 | (24) Battery Positive Voltage | (24) I | (24) — |
| (25) 25 | (25) 2.5 | (25) RD / GY | (25) 3540 | (25) Battery Positive Voltage | (25) I | (25) — |
| (26) 26 | (26) 0.75 | (26) RD / BN | (26) 3640 | (26) Battery Positive Voltage | (26) II | (26) — |
| 27 - 28 | — | — | — | Not Occupied | — | — |
| (29) 29 | (29) 0.5 | (29) RD / BU | (29) 5240 | (29) Battery Positive Voltage | (29) II | (29) — |
| (30) 30 | (30) 0.5 | (30) RD / VT | (30) 1940 | (30) Battery Positive Voltage | (30) II | (30) — |
| (31) 31 | (31) 0.35 | (31) RD / WH | (31) 7240 | (31) Battery Positive Voltage | (31) II | (31) — |
| (32) 32 | (32) 0.5 | (32) YE | (32) 6812 | (32) Out of Park Signal | (32) II | (32) — |
| 33 - 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 2.5 | (37) RD / GY | (37) 3540 | (37) Battery Positive Voltage | (37) I | (37) — |
| 38 | — | — | — | Not Occupied | — | — |

### X51R Instrument Panel Wiring Harness Junction Block - Right X2



5403539

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35264616
- Service Connector: 19371180
- Description: 48-Way F 1.5, 2.8, 6.3 CTS Series( GN)

## Terminal Part Information

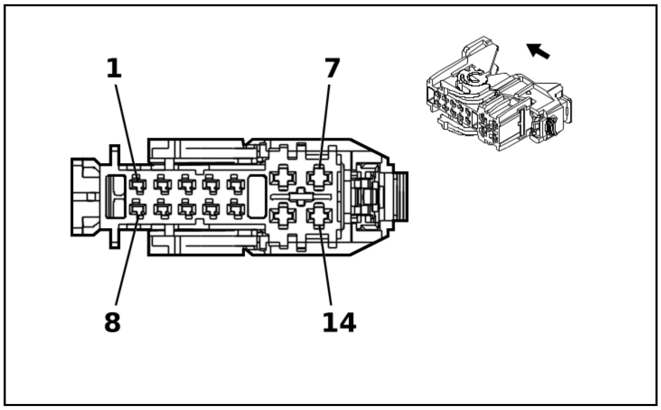
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X51R Instrument Panel Wiring Harness Junction Block - Right X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| 2 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) RD / VT | (8) 14240 | (8) Battery Positive Voltage | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) RD / YE | (9) 6540 | (9) Battery Positive Voltage | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.75 | (11) RD / GN | (11) 10240 | (11) Battery Positive Voltage Police | (11) III | (11) — |
| 12 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) RD / BU | (14) 3240 | (14) Battery Positive Voltage | (14) III | (14) — |
| (15) 15 | (15) 0.35 | (15) RD / BN | (15) 10040 | (15) Battery Positive Voltage | (15) III | (15) — |
| (16) 16 | (16) 1 | (16) RD / VT | (16) 4640 | (16) Battery Positive Voltage | (16) III | (16) — |
| (17) 17 | (17) 0.35 | (17) RD / WH | (17) 6440 | (17) Battery Positive Voltage | (17) III | (17) — |
| (18) 18 | (18) 0.35 | (18) RD / VT | (18) 3340 | (18) Battery Positive Voltage | (18) III | (18) — |
| 19 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (20) 20 | (20) 0.75 | (20) RD / GY | (20) 10340 | (20) Battery Positive Voltage Police | (20) I | (20) — |
| 21 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 5 | (24) RD / GY | (24) 2042 | (24) Battery Positive Voltage | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) RD / BU | (25) 4540 | (25) Battery Positive Voltage | (25) II | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) RD / YE | (27) 2340 | (27) Battery Positive Voltage | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) RD / VT | (28) 4040 | (28) Battery Positive Voltage | (28) I | (28) — |
| 29 - 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 1.5 | (32) RD / BU | (32) 2540 | (32) Battery Positive Voltage | (32) III | (32) — |
| (33) 33 | (33) 0.75 | (33) RD / WH | (33) 1340 | (33) Battery Positive Voltage | (33) III | (33) — |
| (34) 34 | (34) 0.75 | (34) RD / GY | (34) 2140 | (34) Battery Positive Voltage | (34) III | (34) — |
| (35) 35 | (35) 1 | (35) RD / GY | (35) 2840 | (35) Battery Positive Voltage | (35) III | (35) — |
| 36 - 40 | — | — | — | Not Occupied | — | — |
| (41) 41 | (41) 0.75 | (41) RD / GN | (41) 5140 | (41) Battery Positive Voltage | (41) I | (41) — |
| (42) 42 | (42) 0.35 | (42) RD / GN | (42) 5140 | (42) Battery Positive Voltage | (42) I | (42) — |
| 43 - 44 | — | — | — | Not Occupied | — | — |
| (45) 45 | (45) 0.5 | (45) RD / WH | (45) 2740 | (45) Battery Positive Voltage | (45) I | (45) — |
| 46 - 48 | — | — | — | Not Occupied | — | — |

### X51R Instrument Panel Wiring Harness Junction Block - Right X3



5190115

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 33377074
- Service Connector: 13525315
- Description: 14-Way F 1.5, 2.8 MCP Series( GY)

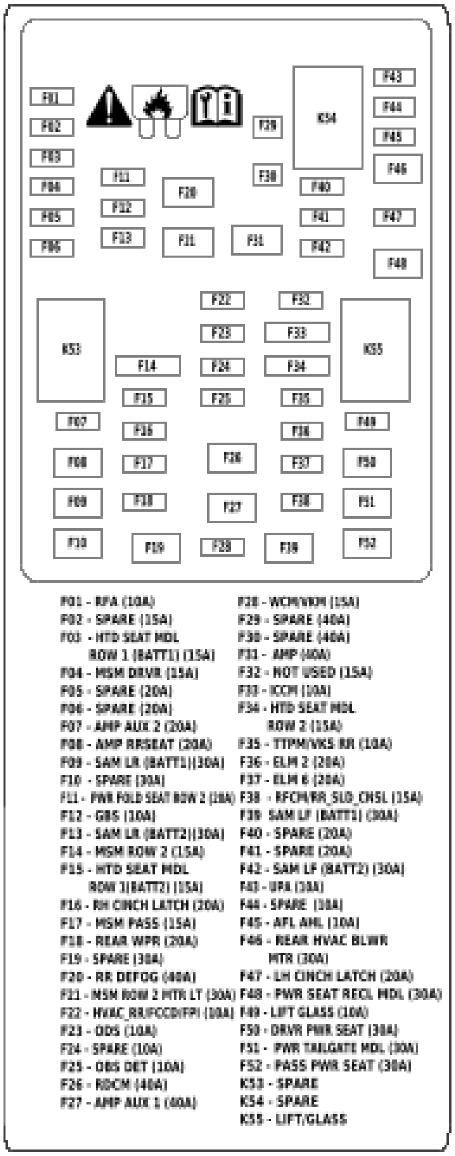
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332366 | J-35616-35 (VT) | J-38125-212 |

## X51R Instrument Panel Wiring Harness Junction Block - Right X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 1 | (7) RD / YE | (7) 240 | (7) Battery Positive Voltage | (7) I | (7) — |
| 8 - 14 | — | — | — | Not Occupied | — | — |

## X53A Body Wiring Harness Junction Block - Rear Label


F01
F02
F03
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F07
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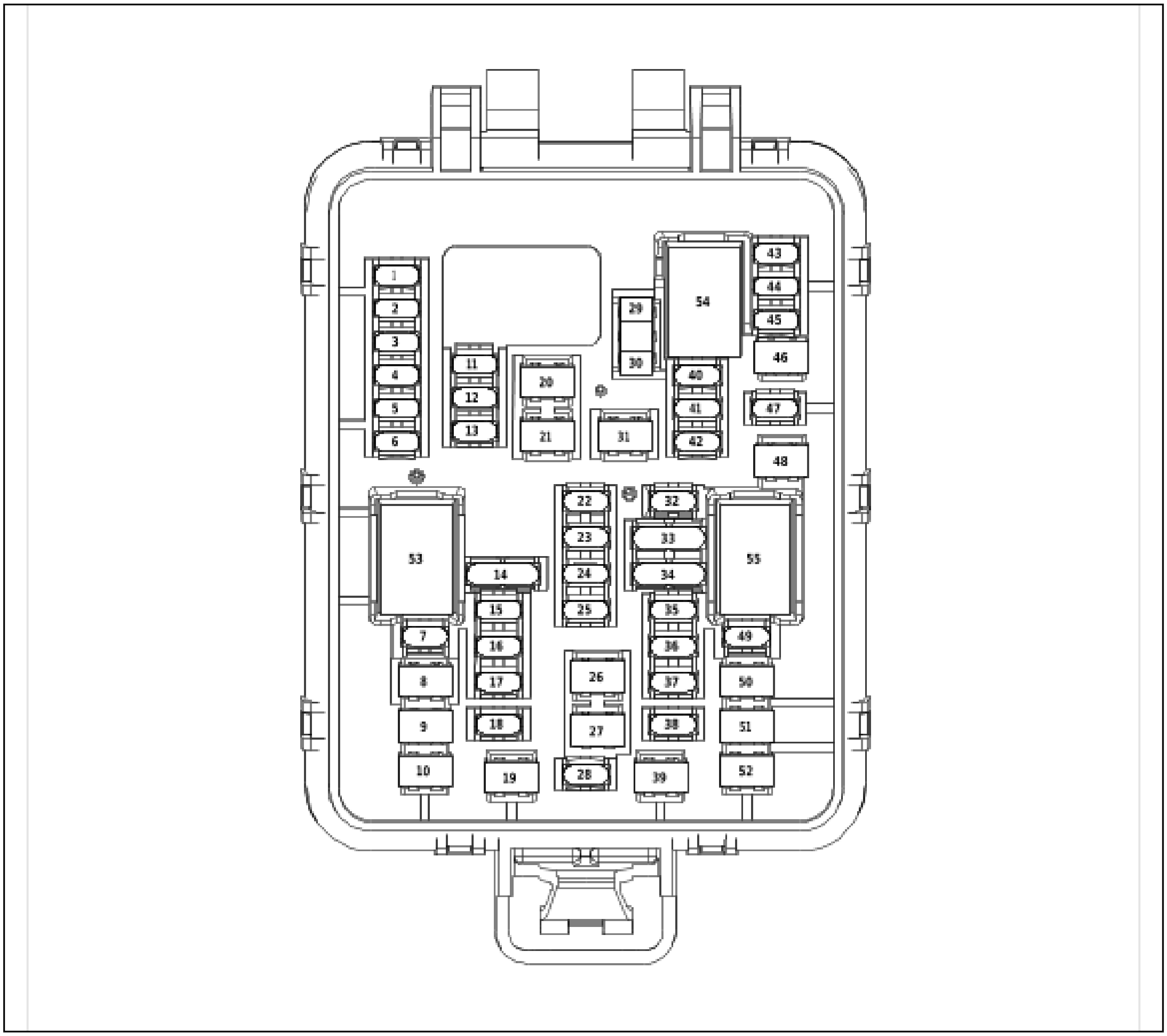
F09
F10
F49
F50
F51
F52
F01 - RPA (10A)
F02 - SPARE (15A)
F03 - HTD SEAT MDL ROW 1 (BATT1) (15A)
F04 - MSM DRVR (15A)
F05 - SPARE (20A)
F06 - SPARE (20A)
F07 - AMP AUX 2 (20A)
F08 - AMP RRSEAT (20A)
F09 - SAM LR (BATT1)(30A)
F10 - SPARE (30A)
F11 - PWR FOLD SEAT ROW 2 (10A)
F12 - GBS (10A)
F13 - SAM LR (BATT2)(30A)
F14 - MSM ROW 2 (15A)
F15 - HTD SEAT MDL ROW 1(BATT2) (15A)
F16 - RH CINCH LATCH (20A)
F17 - MSM PASS (15A)
F18 - REAR WPR (20A)
F19 - SPARE (30A)
F20 - RR DEFOG (40A)
F21 - MSM ROW 2 MTR LT (30A)
F22 - HVAC_RR/FCCD/FPI (10A)
F23 - ODS (10A)
F24 - SPARE (10A)
F25 - OBS DET (10A)
F26 - RDCM (40A)
F27 - AMP AUX 1 (40A)
F28 - WCM/VKM (15A)
F29 - SPARE (40A)
F30 - SPARE (40A)
F31 - AMP (40A)
F32 - NOT USED (15A)
F33 - ICCM (10A)
F34 - HTD SEAT MDL ROW 2 (15A)
F35 - TTPM/VKS RR (10A)
F36 - ELM 2 (20A)
F37 - ELM 6 (20A)
F38 - RFCM/RR_SLD_CNSL (15A)
F39 SAM LF (BATT1) (30A)
F40 - SPARE (20A)
F41 - SPARE (20A)
F42 - SAM LF (BATT2) (30A)
F43 - UPA (10A)
F44 - SPARE (10A)
F45 - AFL AHL (10A)
F46 - REAR HVAC BLWR MTR (30A)
F47 - LH CINCH LATCH (20A)
F48 - PWR SEAT RECL MDL (30A)
F49 - LIFT GLASS (10A)
F50 - DRVR PWR SEAT (30A)
F51 - PWR TAILGATE MDL (30A)
F52 - PASS PWR SEAT (30A)
K53 - SPARE
K54 - SPARE
K55 - LIFT/GLASS

6665308

## X53A Body Wiring Harness Junction Block - Rear Top View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5331356

### Usage Table

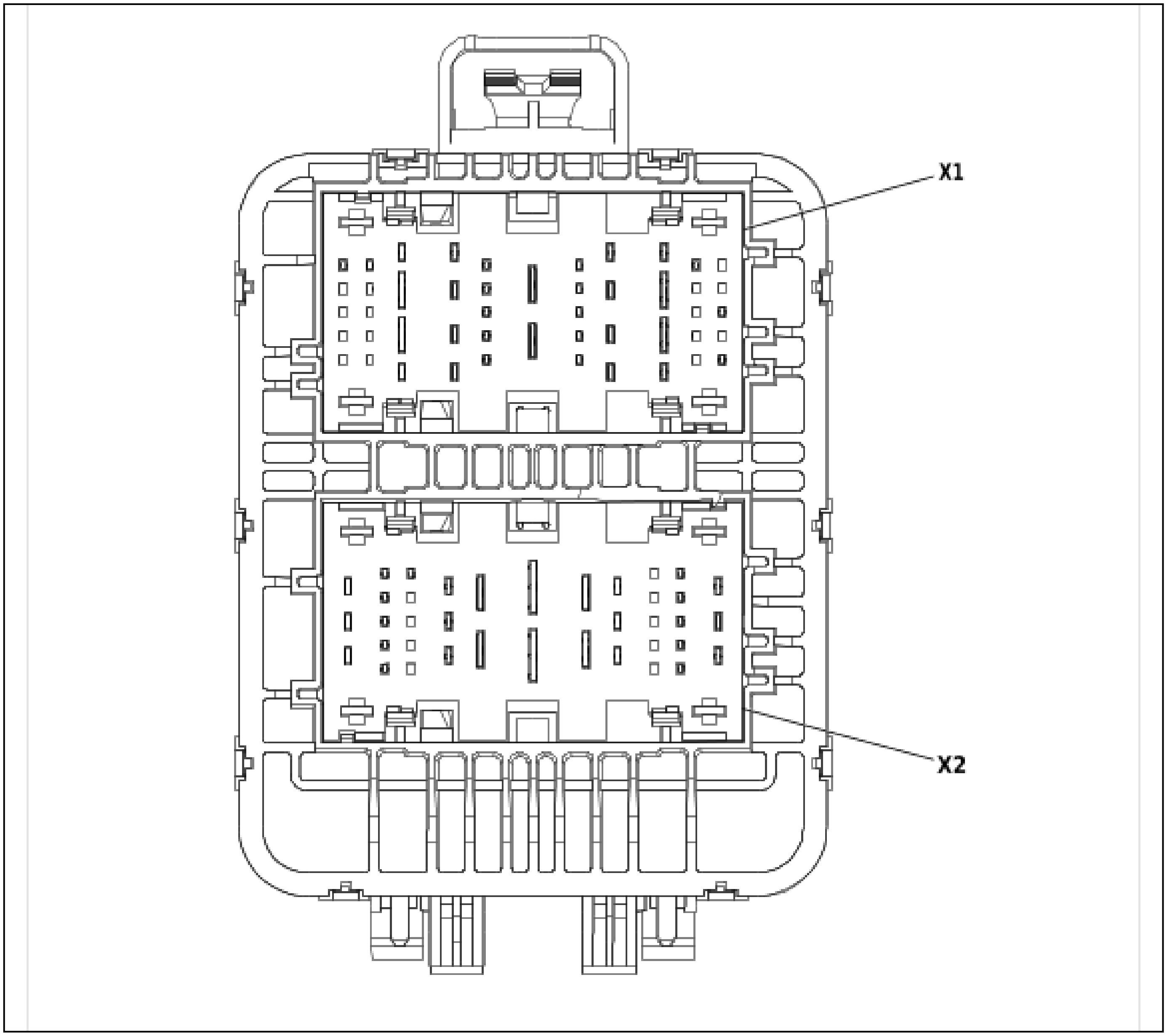
| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Fuses** | | | | |
| F01 | RFA | F1RA | 10A | • K77 Remote Function Actuator Module |
| F02 | SPARE | F2RA | 15A | • Not Used |
| F03 | HTD SEAT MDL ROW 1 (BATT1) | F3RA | 15A | • K29FV Front Seat Heater Vent Control Module (KA1) |
| F04 | MSM DRVR | F4RA | 15A | • K40D Driver Seat Adjuster Memory Module (A45/AUN)<br>• K104DP Front Seat Bladder Control Module - Driver Primary (AVK)<br>• S64D Front Seat Adjuster Switch - Driver (A45/AUN) |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F05 | SPARE | F5RA | 20A | • Not Used |
| F06 | SPARE | F6RA | 20A | • Not Used |
| F07 | AMP AUX 2 | F7RA | 20A | • Not Used |
| F08 | AMP RRSEAT | F8RA | 20A | • Not Used |
| F09 | SAM LR (BATT1) | F9RA | 30A | • Not Used |
| F10 | SPARE | F10RA | 30A | • Not Used |
| F11 | PWR FOLD SEAT ROW 2 | F11RA | 20A | • M107LR Folding Rear Seat Back Actuator - Left (ATN/ATT)<br>• M107RR Folding Rear Seat Back Actuator - Right (ATN/ATT) |
| F12 | GBS | F12RA | 10A | • B159BL Body Side Rear Window Glass Breakage Sensor - Left (UTU)<br>• B159R Quarter Window Glass Breakage Sensor - Right (UTU) |
| F13 | SAM LR (BATT2) | F13RA | 30A | • Not Used |
| F14 | MSM ROW 2 | F14RA | 15A | • Not Used |
| F15 | HTD SEAT MDL ROW 1 (BATT 2) | F15RA | 15A | • K29FV Front Seat Heater Vent Control Module (KA1) |
| F16 | RH CINCH LATCH | F16RA | 20A | • Not Used |
| F17 | MSM PASS | F17RA | 15A | • K104P Front Seat Bladder Control Module - Passenger (AVU) |
| F18 | REAR WPR | F18RA | 20A | • M45 Rear Winodw Wiper Motor |
| F19 | SPARE | F19RA | 30A | • Not Used |
| F20 | RR DEFOG | F20RA | 40A | • E18 Rear Window Defogger Grid<br>• F12RA |
| F21 | MSM ROW 2 MTR LT | F21RA | 30A | • Not Used |
| F22 | HVAC_RR/ FCCD/FPI | F22RA | 10A | • A34 Heater and Air Conditioning Auxiliary Control |
| F23 | ODS | F23RA | 10A | • K313 Interior Object Detection Module (RS0 / RSM) |
| F24 | SPARE | F24RA | 10A | • Not Used |
| F25 | OBS DET | F25RA | 10A | • B218L Side Obstacle Detection Control Module - Left ((UKI/UKW)-UKL)<br>• B218R Side Obstacle Detection Control Module - Right ((UKI/UKW)-UKL)<br>• B233LR Short Range Radar Sensor - Left Rear (UKI/UKZ)<br>• B233RR Short Range Radar Sensor - Right Rear (UKI/UKZ)<br>• B233SL Short Range Radar Rear Side Sensor - Left (UKL)<br>• B233SR Short Range Radar Rear Side Sensor - Right (UKL) |
| F26 | RDCM | F26RA | 40A | • K164 Differential Control Module (G96) |
| F27 | AMP AUX 1 | F27RA | 40A | • Not Used |
| F28 | WCM/VKM | F28RA | 15A | • K183 UHF Short Range Low Energy Remote Control Access Transceiver (BOR/BOY)<br>• T22 Wireless Accessory Charging Module (K7A) |

| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| F29 | SPARE | F29RA | 40A | • Not Used |
| F30 | SPARE | F30RA | 40A | • Not Used |
| F31 | AMP | F31RA | 40A | • T3 Audio Amplifier (UQS) |
| F32 | NOT USED | F32RA | 15A | • Not Used |
| F33 | ICCM | F33RA | 10A | • K38 Chassis Control Module (G96) |
| F34 | HTD SEAT MDL ROW 2 | F34RA | 15A | • K29R Rear Seat Heater Control Module (KA6) |
| F35 | TTPM/VKS RR | F35RA | 10A | • B342B UHF Low Energy Remote Control Access Sensor Transceiver 2 (BOR/BOY)<br>• B342D UHF Low Energy Remote Control Access Sensor Transceiver 4 (BOR/BOY)<br>• B342E UHF Low Energy Remote Control Access Sensor Transceiver 5 (BOR/BOY)<br>• K214 Trailer Tire Pressure Indicator Module (UET) |
| F36 | ELM 2 | F36RA | 20A | • K219 Lighting Control Module |
| F37 | ELM 6 | F37RA | 20A | • K219 Lighting Control Module |
| F38 | RFCM/ RR_SLD_CSL | F38RA | 15A | • K175 Front Floor Console Compartment Cooler (DCK)<br>• K230 Front Floor Console Control Module (DCH) |
| F39 | SAM LF (BATT1) | F39RA | 30A | • Not Used |
| F40 | SPARE | F40RA | 20A | • Not Used |
| F41 | SPARE | F41RA | 20A | • Not Used |
| F42 | SAM LF (BATT2) | F42RA | 30A | • Not Used |
| F43 | UPA | F43RA | 10A | • K182 Parking Assist Control Module |
| F44 | SPARE | F44RA | 10A | • Not Used |
| F45 | AFL AHL | F45RA | 10A | • Not Used |
| F46 | REAR HVAC BLWR MTR | F46RA | 30A | • K8AB Blower Motor Control Module - Rear |
| F47 | LH CINCH LATCH | F47RA | 20A | • Not Used |
| F48 | PWR SEAT RECL MDL | F48RA | 30A | • K169 Folding 3rd Row Seat Module (AS8) |
| F49 | LIFT GLASS | F49RA | 10A | • M33 Liftgate Window Latch |
| F50 | DRVR PWR SEAT | F50RA | 30A | • K40D Driver Seat Adjuster Memory Module (A45)<br>• S64D Front Seat Adjuster Switch - Driver (- (A45 / AUN))<br>• S65D Front Seat Lumbar Switch - Driver (AL9) |
| F51 | PWR TAILGATE MDL | F51RA | 30A | • K194 Rear Gate Module (TB5/TCP) |
| F52 | PASS PWR SEAT | F52RA | 30A | • S64P Front Seat Adjuster Switch - Passenger<br>• S65P Front Seat Lumbar Switch - Passenger (AT9) |
| **Relays** | | | | |
| K53 | SPARE | — | — | • Not Used |
| K54 | SPARE | — | — | • Not Used |
| K55 | LIFT GLASS | KR162 Liftgate Window Release Relay | — | • F49RA |

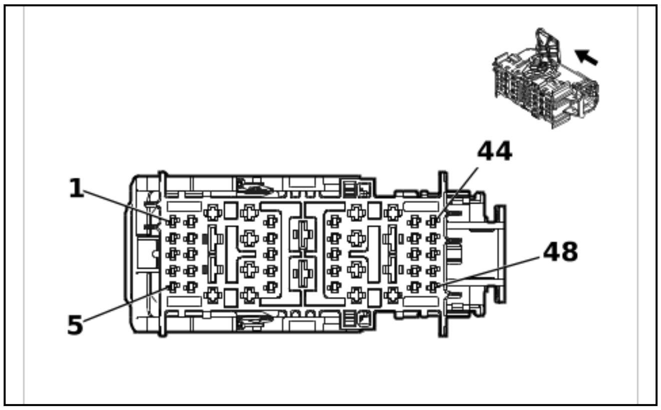
| No. | Device Label Name | Device Assigned Name | Rating | Description |
|---|---|---|---|---|
| **Important: Relays listed below are non-serviceable Printed Circuit Board (PCB) relays and are internal to the block.** | | | | |
| — | — | KR5 Rear Defogger Relay | — | • F12RA<br>• F20RA |

### X53A Body Wiring Harness Junction Block - Rear Bottom View



5331358

### X53A Body Wiring Harness Junction Block - Rear X1



5403539

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35264616
- Service Connector: 19371180
- Description: 48-Way F 1.5, 2.8, 6.3 CTS Series( GN)

## Terminal Part Information

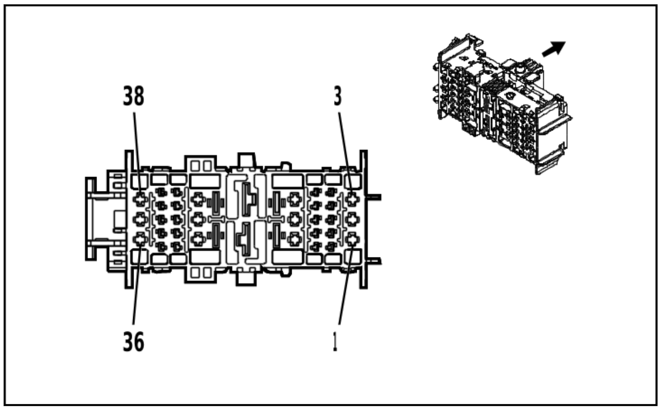
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19369711 | J-35616-14 (GN) | J-38125-557 |
| II | 84764078 | J-35616-42 (RD) | J-38125-221 |
| III | 84779405 | J-35616-35 (VT) | J-38125-212 |

## X53A Body Wiring Harness Junction Block - Rear X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BK | (5) 2050 | (5) Ground | (5) I | (5) — |
| 6 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.75 | (16) RD / BU | (16) 3940 | (16) Battery Positive Voltage | (16) III | (16) — |
| (17) 17 | (17) 1 | (17) RD / YE | (17) 3040 | (17) Battery Positive Voltage | (17) III | (17) — |
| 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.75 | (19) RD / GN | (19) 6140 | (19) Battery Positive Voltage | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 1 | (21) RD / BN | (21) 4940 | (21) Battery Positive Voltage | (21) I | (21) — |
| (22) 22 | (22) 0.75 | (22) RD / BN | (22) 7540 | (22) Battery Positive Voltage | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) RD / GN | (23) 11440 | (23) Battery Positive Voltage | (23) I | (23) — |
| (24) 24 | (24) 3 | (24) RD / GY | (24) 5540 | (24) Battery Positive Voltage | (24) II | (24) — |
| 25 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (26) 26 | (26) 0.75 | (26) RD / WH | (26) 5740 | (26) Battery Positive Voltage | (26) I | (26) — |
| 27 - 28 | — | — | — | Not Occupied | — | — |
| (29) 29 | (29) 0.5 | (29) RD / GY | (29) 4840 | (29) Battery Positive Voltage | (29) I | (29) — |
| (30) 30 | (30) 0.5 | (30) RD / VT | (30) 6340 | (30) Battery Positive Voltage | (30) I | (30) — |
| (31) 31 | (31) 1 | (31) RD / GN | (31) 1540 | (31) Battery Positive Voltage | (31) III | (31) — |
| (32) 32 | (32) 1 | (32) RD / BU | (32) 840 | (32) Battery Positive Voltage | (32) III | (32) — |
| (33) 33 | (33) 1 | (33) RD / VT | (33) 8640 | (33) Battery Positive Voltage | (33) III | (33) — |
| 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.35 | (35) BU / GN | (35) 4089 | (35) Rear Closure Motor Control | (35) III | (35) — |
| (36) 36 | (36) 2.5 | (36) RD / YE | (36) 5040 | (36) Battery Positive Voltage | (36) II | (36) — |
| (37) 37 | (37) 2.5 | (37) RD / BN | (37) 3842 | (37) Battery Positive Voltage | (37) II | (37) — |
| (38) 38 | (38) 2.5 | (38) RD / YE | (38) 7440 | (38) Battery Positive Voltage | (38) III | (38) — |
| 39 - 42 | — | — | — | Not Occupied | — | — |
| (43) 43 | (43) 0.75 | (43) RD / BU | (43) 6740 | (43) Battery Positive Voltage | (43) I | (43) — |
| (44) 44 | (44) 0.35 | (44) GY / YE | (44) 6188 | (44) Liftgate Window/Rear Compartment Lid Motor Unlatch Control | (44) I | (44) — |
| 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 0.5 | (46) RD / GN | (46) 2642 | (46) Battery Positive Voltage | (46) I | (46) — |
| 47 - 48 | — | — | — | Not Occupied | — | — |

## X53A Body Wiring Harness Junction Block - Rear X2



4994230

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35729474
- Service Connector: 85791494
- Description: 38-Way F 1.5, 2.8, 6.3 MCP, 9.5 MCON-LL Series( GY)

### Terminal Part Information

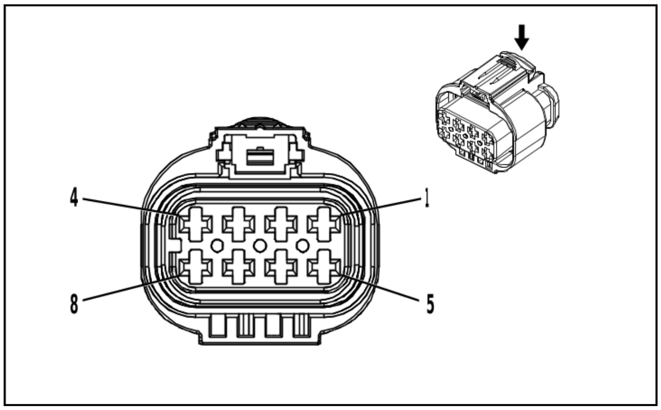
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332366 | J-35616-35 (VT) | J-38125-212 |
| II | 19371175 | J-35616-2A (GY) | EL-38125-560A |
| III | 84764078 | J-35616-42 (RD) | J-38125-221 |
| IV | Not Available | J-35616-35 (VT) | J-38125-212 |
| V | Not required | J-35616-22 (RD) | No Tool Required |

### X53A Body Wiring Harness Junction Block - Rear X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) RD / BN | (4) 6640 | (4) Battery Positive Voltage | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) RD / VT | (5) 2640 | (5) Battery Positive Voltage | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BN / VT | (7) 193 | (7) Rear Defogger Relay Control | (7) II | (7) — |
| 8 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 1 | (14) RD / GY | (14) 6240 | (14) Battery Positive Voltage | (14) I | (14) — |
| (15) 15 | (15) 0.5 | (15) YE / BK | (15) 2930 | (15) Glass Breakage Sensor Supply Voltage | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 2.5 | (17) BN / VT | (17) 293 | (17) Rear Defogger Grid Control | (17) III | (17) — |
| 18 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (19) 19 | (19) 10 | (19) RD / GN | (19) 1942 | (19) Battery Positive Voltage | (19) V | (19) — |
| (20) 20 | (20) 10 | (20) RD / WH | (20) 2942 | (20) Battery Positive Voltage | (20) V | (20) — |
| 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 3 | (22) RD / YE | (22) 3740 | (22) Battery Positive Voltage | (22) III | (22) — |
| 23 - 30 | — | — | — | Not Occupied | — | — |
| (31) 31 | (31) 0.5 | (31) RD / WH | (31) 4740 | (31) Battery Positive Voltage | (31) II | (31) — |
| 32 - 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 3 | (36) RD / GY | (36) 1740 | (36) Battery Positive Voltage | (36) IV | (36) — |
| 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2.5 | (38) RD / GY | (38) 7840 | (38) Battery Positive Voltage | (38) I | (38) — |

### A7 Fuel Tank Fuel Pump Module



3749582

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 2-2109441-5
- Service Connector: 19354078
- Description: 8-Way F 2.8 Series, Sealed( L-GY)

## Terminal Part Information

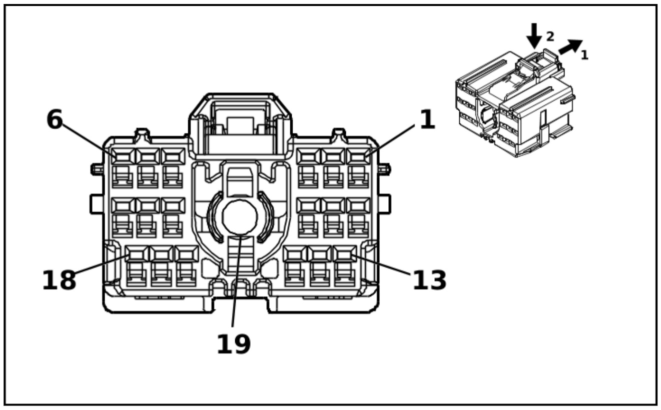
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## A7 Fuel Tank Fuel Pump Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY | (1) 120 | (1) Fuel Pump Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) YE / GY | (2) 4137 | (2) Fuel Pump Supply Voltage Phase 2 | (2) I | (2) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 2.5 | (3) WH / BN | (3) 4138 | (3) Fuel Pump Supply Voltage Phase 3 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 7444 | (4) Fuel Pump Assembly Shield Ground | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / GN | (5) 1936 | (5) Primary Fuel Level Sensor Signal | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / GN | (6) 6281 | (6) Fuel Level Sensor Low Reference | (6) II | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |

### A9A Outside Rearview Mirror - Driver



5253439

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 6098-8386
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series( BK)

## Terminal Part Information

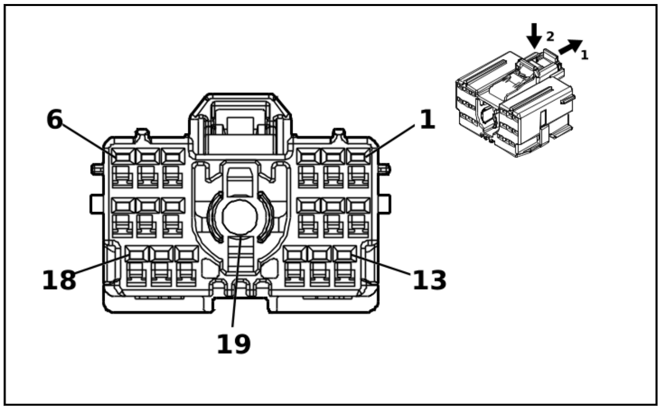
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Service by Cable | No Tool Required | No Tool Required |

## A9A Outside Rearview Mirror - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 2790 | (1) Left Front Mirror Motor Right [+] Left [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / BU | (2) 2788 | (2) Left Front Mirror Motor Up [+] Down [-] Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH / GN | (3) 2786 | (3) Left Front Mirror Motor Fold In Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY / YE | (4) 1760 | (4) Left Side Object Detection LED Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / GN | (5) 5966 | (5) Approach Lamp Control | (5) I | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.35 | (6) WH / YE | (6) 2792 | (6) Left Front Mirror Position Sensor Left [-] Right [+] Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 606 | (7) Left Outside Rearview Mirror Heater Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH / GY | (8) 2114 | (8) Left Turn Signal Lamp Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) BK | (9) 1150 | (9) Ground | (9) II | (9) — |
| (10) 10 | (10) 0.35 | (10) VT / RD | (10) 2791 | (10) Left Front Mirror Position Sensor High Reference | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) GY / BN | (11) 2787 | (11) Left Front Mirror Position Sensor Up [+] Down [-] Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BK / YE | (12) 1691 | (12) Automatic Day/Night Mirror Low Reference | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) YE / BN | (14) 2789 | (14) Left Front Mirror Motor Common Control | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY / WH | (15) 2785 | (15) Left Front Mirror Motor Fold Out Control | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) YE / WH | (17) 1690 | (17) Mirror Dimming Signal | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BK / BN | (18) 673 | (18) Left Outside Rearview Mirror Position Sensor Low Reference | (18) I | (18) — |
| (19) 19 | (19) 0 | (19) Coax Cable | (19) 4725 | (19) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (19) III | (19) — |

### A9B Outside Rearview Mirror - Passenger



5253439

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 6098-8386
- Service Connector: Service by Harness - See Part Catalog
- Description: 19-Way F 1.2 MCON, Coaxial Series( BK)

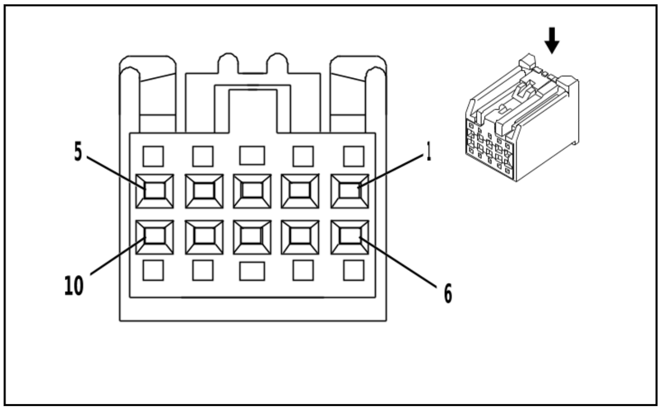
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Service by Cable | No Tool Required | No Tool Required |

## A9B Outside Rearview Mirror - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / BK | (1) 2798 | (1) Right Front Mirror Motor Right [+] Left [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / VT | (2) 2796 | (2) Right Front Mirror Motor Up [+] Down [-] Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / GY | (3) 2794 | (3) Right Front Mirror Motor Fold In Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY | (4) 1761 | (4) Right Side Object Detection LED Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / GN | (5) 5966 | (5) Approach Lamp Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) VT / WH | (6) 2800 | (6) Right Front Mirror Position Sensor Left [-] Right [+] Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BN / VT | (7) 607 | (7) Right Outside Rearview Mirror Heater Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN / GY | (8) 2115 | (8) Right Turn Signal Lamp Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) BK | (9) 1250 | (9) Ground | (9) II | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / RD | (10) 2799 | (10) Right Front Mirror Position Sensor High Reference | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BU / YE | (11) 2795 | (11) Right Front Mirror Position Sensor Up [+] Down [-] Signal | (11) I | (11) — |
| 12 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 2797 | (14) Right Front Mirror Motor Common Control | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) YE / WH | (15) 2793 | (15) Right Front Mirror Motor Fold Out Control | (15) I | (15) — |
| 16 - 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) BK / GN | (18) 675 | (18) Right Outside Rearview Mirror Position Sensor Low Reference | (18) I | (18) — |
| (19) 19 | (19) 0 | (19) Coax Cable | (19) 4724 | (19) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (19) III | (19) — |

## A10 Inside Rearview Mirror X1



2180211

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: AIT2PB-10P-2AK
- Service Connector: 13577390
- Description: 10-Way F 0.64 Kaizen Series( BK)

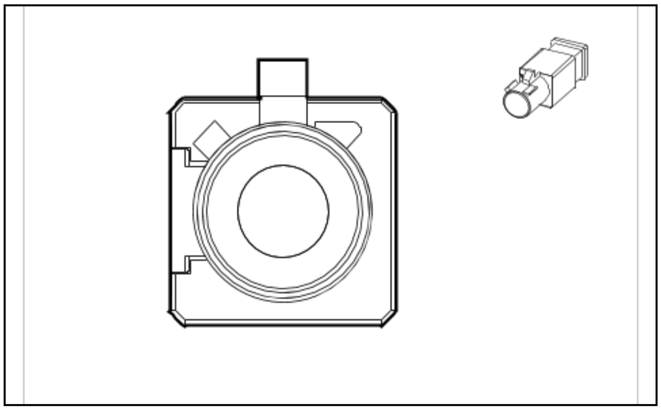
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575742 | J-35616-64B (L-BU) | J-38125-215A |

### A10 Inside Rearview Mirror X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / WH | (1) 24 | (1) Backup Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 239 | (2) Run/Crank Ignition 1 Voltage | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BK / WH | (5) 1851 | (5) Signal Ground | (5) I | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) BK / YE | (8) 1691 | (8) Automatic Day/Night Mirror Low Reference | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) YE / WH | (9) 1690 | (9) Mirror Dimming Signal | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

### A10 Inside Rearview Mirror X2



6410256

**Connector Part Information**

- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 59Z114-000-A
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BK)

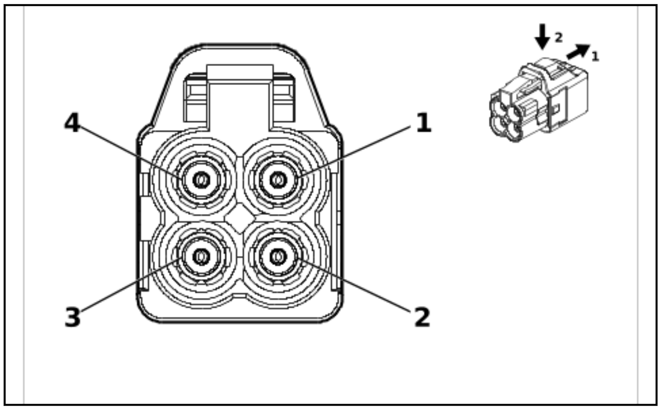
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A10 Inside Rearview Mirror X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Full Display Mirror Rear Camera Coaxial Video Signal | I | — |

### A11 Radio X1



5835118

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: AMZW25-001-A
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( BK)

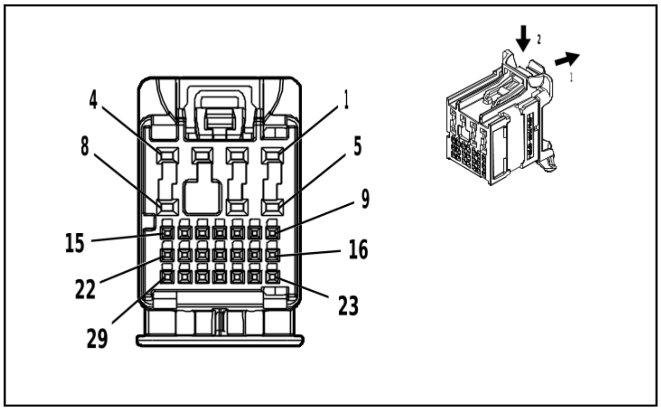
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0 | (2) Coax Cable | (2) 6130 | (2) Coaxial Antenna XM Signal | (2) I | (2) — |
| (3) 3 | (3) 0 | (3) Coax Cable | (3) 3297 | (3) Coaxial Antenna DAB Signal | (3) I | (3) — |
| (4) 4 | (4) 0 | (4) Coax Cable | (4) 6001 | (4) Coaxial Antenna RF Signal | (4) I | (4) — |

**A11 Radio X2**



4578560

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( DK-GY with GY Inner Connector)

## Terminal Part Information

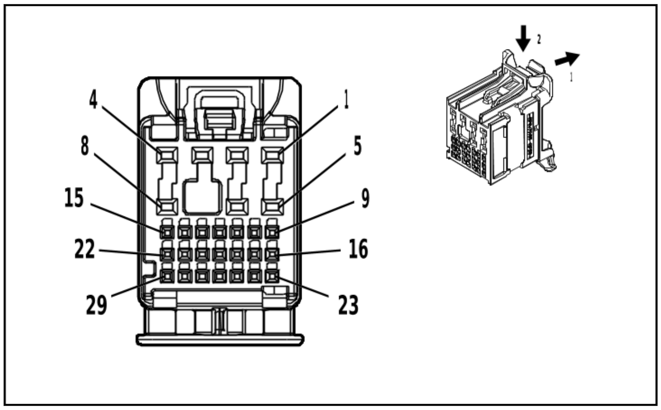
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A11 Radio X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN | (1) 199 | (1) Left Rear Speaker [+] Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BK | (3) 117 | (3) Right Front Speaker [-] Control 1 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BK | (4) 115 | (4) Right Rear Speaker [-] Control | (4) II | (4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) BN / BU | (5) 118 | (5) Left Front Speaker [-] Control 1 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) YE | (6) 200 | (6) Right Front Speaker 1 [+] Control | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 46 | (8) Right Rear Speaker [+] Control | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / YE | (10) 4984 | (10) AUTOSAR CAN Bus [-] 5 Serial Data | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) GN / WH | (13) 24 | (13) Backup Lamp Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) GN / YE | (14) 7066 | (14) Entertainment Remote Enable Signal | (14) I | (14) — |
| 15 - 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) GN / BK | (18) 10652 | (18) Radio LIN Bus 1 | (18) I | (18) — |
| 19 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.35 | (22) GY / YE | (22) 3885 | (22) Forward Collision Alert LED Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) GY / BK | (23) 4787 | (23) Day Night LED Control | (23) I | (23) — |
| 24 - 29 | — | — | — | Not Occupied | — | — |

### A11 Radio X3



4496253

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0014
- Service Connector: 13534974
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BK with GY Inner Connector)

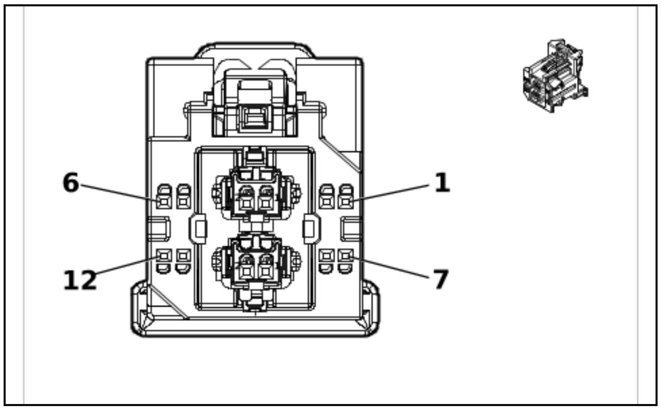
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A11 Radio X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / YE | (2) 2340 | (2) Battery Positive Voltage | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1451 | (3) Signal Ground | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.75 | (6) BK / WH | (6) 1451 | (6) Signal Ground | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GN / BK | (8) 116 | (8) Left Rear Speaker [-] Control | (8) II | (8) — |
| 9 - 28 | — | — | — | Not Occupied | — | — |
| (29) 29 | (29) 0.35 | (29) GN / BN | (29) 507 | (29) Wait To Start Indicator Control | (29) I | (29) — |

### A11 Radio X4



5902882

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13546790
- Service Connector: 86555356
- Description: 12-Way F 0.5 CTS, AMEC High Speed Data Series( BK)

## Terminal Part Information

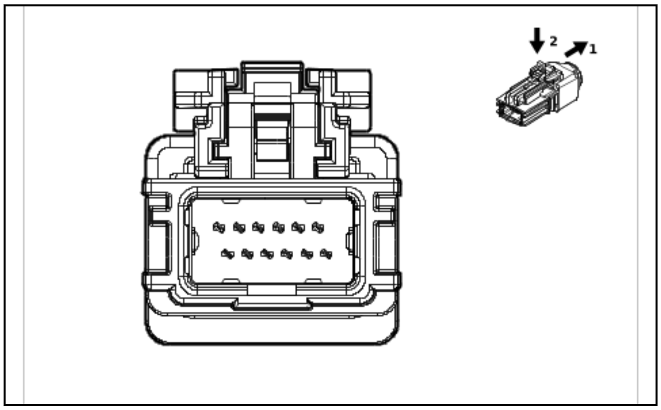
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## A11 Radio X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / WH | (1) 4758 | (1) Ethernet Bus 2 [+] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 4757 | (2) Ethernet Bus 2 [-] | (2) I | (2) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) WH | (5) 8580 | (5) Automotive Audio Bus A2B Serial Data 1 [+] | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) GN | (6) 8579 | (6) Automotive Audio Bus A2B Serial Data 1 [-] | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) VT / WH | (7) 7213 | (7) Ethernet Bus 5 [+] | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) VT | (8) 7212 | (8) Ethernet Bus 5 [-] | (8) I | (8) — |
| (9) 9 | (9) 0.13<br>(9) 0.13 | (9) GN<br>(9) WH | (9) 7210<br>(9) 7210 | (9) Ethernet Bus 4 [-]<br>(9) Ethernet Bus 4 [-] | (9) I<br>(9) I | (9) - ( 5W4/ 9C1)<br>(9) 5W4/ 9C1 |
| (10) 10 | (10) 0.13<br>(10) 0.13 | (10) WH<br>(10) GN | (10) 7211<br>(10) 7211 | (10) Ethernet Bus 4 [+]<br>(10) Ethernet Bus 4 [+] | (10) I<br>(10) I | (10) - ( 5W4/ 9C1)<br>(10) 5W4/ 9C1 |
| 11 - 12 | — | — | — | Not Occupied | — | — |

### A11 Radio X5



6175343

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 111146-7103
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( GY)

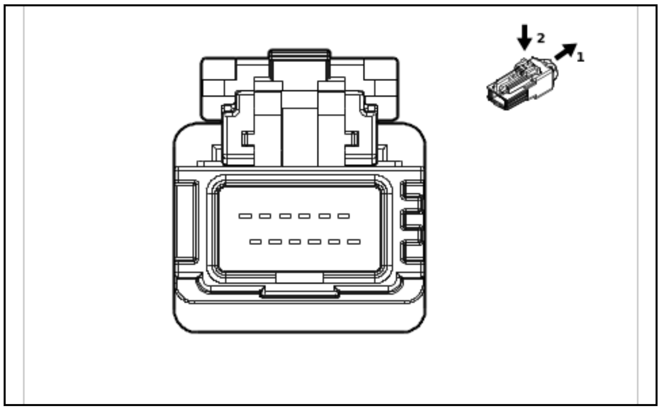
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | LVDS | — | Virtual Cockpit Unit Instrument Panel Display LVDS (Low Voltage Differential Signaling) Low Reference | I | — |

## A11 Radio X6



6186830

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13551157
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( BN)

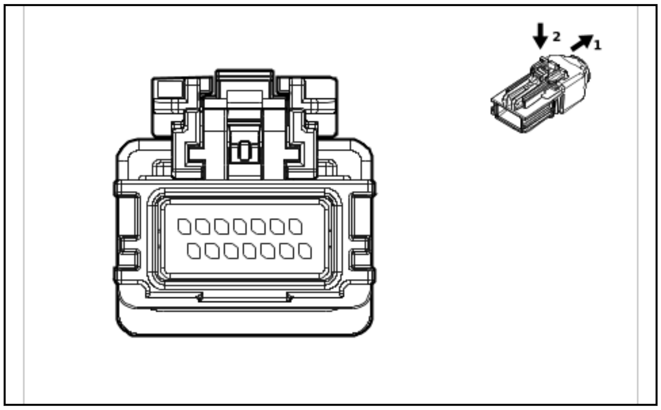
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### A11 Radio X6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | LVDS | — | Virtual Cockpit Unit Instrument Panel Display LVDS (Low Voltage Differential Signaling) Low Reference | I | — |

## A11 Radio X7



6002723

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111146-6000
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 14-Way M 2.0 HSAL-2 Series( BK)

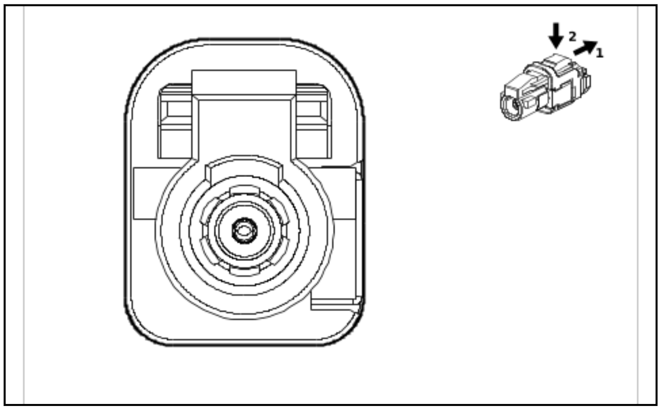
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### A11 Radio X9



5926227

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13544788
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Mini Coax Type( BK)

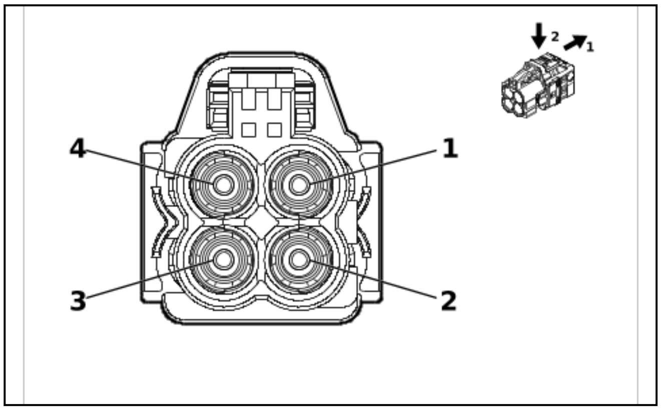
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X9

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | WiFi Antenna Coaxial Signal | I | — |

## A11 Radio X10



5903560

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13563021
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( WH)

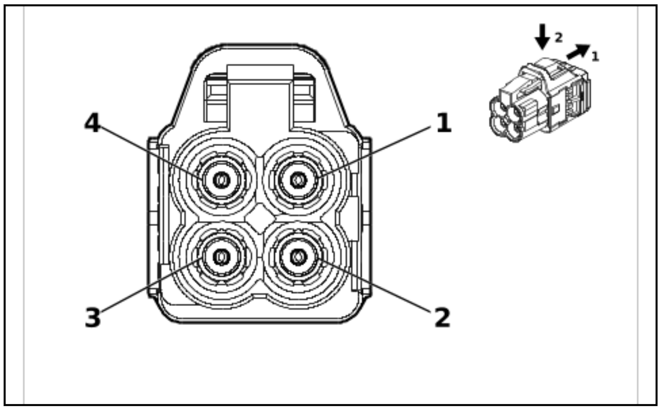
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### A11 Radio X10

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (1) 1 | (1) 0 | (1) Coax Cable | (1) 4725 | (1) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) I | (1) — |
| (2) 2 | (2) 0 | (2) Coax Cable | (2) 4722 | (2) Frontview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) I | (2) — |
| (3) 3 | (3) 0 | (3) Coax Cable | (3) 4724 | (3) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (3) I | (3) — |
| (4) 4 | (4) 0<br>(4) 0 | (4) Coax Cable<br>(4) Coax Cable | (4) 4723<br>(4) 4721 | (4) Video Processing Module LVDS (Low Voltage Differential Signaling) Coaxial Signal<br>(4) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (4) I<br>(4) I | (4) UKL<br>(4) UV2- UKL |

## A11 Radio X11



6186811

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13563022
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( BU)

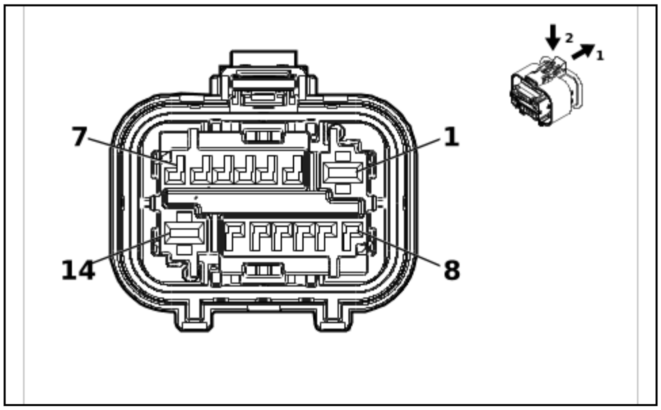
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A11 Radio X11

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (1) 1 | (1) 0 | (1) Coax Cable | (1) 7886 | (1) Trailer 2 Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) I | (1) — |
| (4) 4 | (4) 0 | (4) Coax Cable | (4) 2421 | (4) Trailer Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (4) I | (4) — |

## A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)



6650652

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 12192300
- Service Connector: 85086087
- Description: 14-Way F 1.2 MCON, 2.8 MCP Series, Sealed( BK)

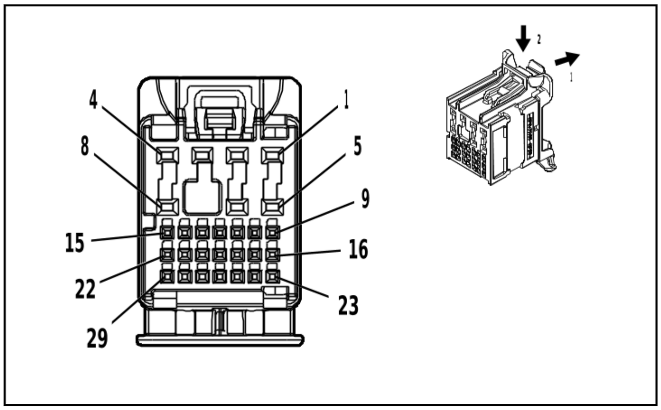
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |

### A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) YE / VT | (1) 1553 | (1) Transfer Case Motor Counter Clockwise Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 8013 | (2) Transfer Case Lock Solenoid Control 2 | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) YE / BN | (5) 1569 | (5) Transfer Case Lock Solenoid Valve Control | (5) I | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 7474 | (8) Incremental Encoder Direction Signal | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) BU / GY | (10) 7473 | (10) Incremental Encoder Impulse Signal | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) WH / GN | (11) 7475 | (11) Incremental Encoder Sensor Voltage Reference | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.5 | (13) VT | (13) 7476 | (13) Incremental Encoder Sensor Low Reference | (13) I | (13) — |
| (14) 14 | (14) 2.5 | (14) YE / GY | (14) 1552 | (14) Transfer Case Motor Clockwise Control | (14) II | (14) — |

### A22 Radio Control X1



4578560

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( DK-GY with GY Inner Connector)

## Terminal Part Information

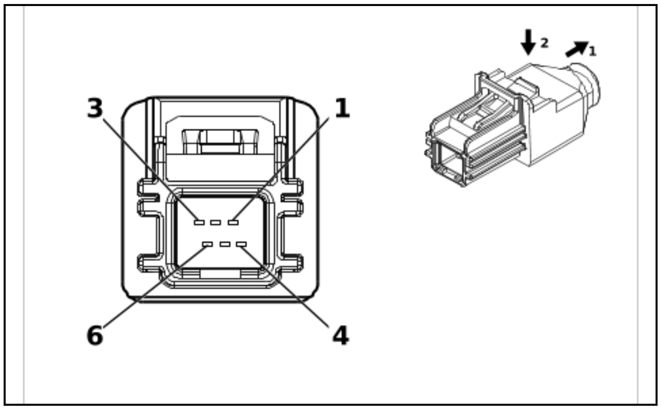
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A22 Radio Control X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / YE | (1) 11748 | (1) HVAC Indicator Supply Voltage | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / WH | (2) 1451 | (2) Signal Ground | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / BU | (3) 11762 | (3) HVAC Temperature 1 Encoder Phase A Signal | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / WH | (4) 11763 | (4) HVAC Temperature 1 Encoder Phase B Signal | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / GY | (5) 11766 | (5) HVAC Temperature 2 Encoder Phase A Signal | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) GY / WH | (6) 11767 | (6) HVAC Temperature 2 Encoder Phase B Signal | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) RD / WH | (8) 1340 | (8) Battery Positive Voltage | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) YE | (9) 11737 | (9) Front Defrost Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / WH | (10) 292 | (10) Rear Defogger Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) VT | (11) 11738 | (11) HVAC Fan Up Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 11744 | (12) HVAC Fan Down Switch Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) GN | (13) 11745 | (13) HVAC Auto Mode Switch Signal | (13) I | (13) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (14) 14 | (14) 0.35 | (14) GN / YE | (14) 11757 | (14) HVAC White Backlighting Intensity Control | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GN / BN | (15) 11758 | (15) HVAC Red Backlighting Intensity Control | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GN / WH | (16) 11759 | (16) HVAC Blue Backlighting Intensity Control | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GY / VT | (17) 11760 | (17) HVAC Amber Backlighting Intensity Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BN / WH | (18) 11761 | (18) HVAC White Fan Backlighting Intensity Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) BK / YE | (19) 1704 | (19) Sensor Low Reference | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / BK | (20) 1923 | (20) Auxiliary HVAC Switch Signal | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) BN / GN | (21) 11754 | (21) HVAC Auto Mode Indicator Control | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) GN / GY | (22) 11749 | (22) HVAC System Enable Indicator Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) BU / VT | (23) 11752 | (23) Front Defrost Indicator Control | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) YE / VT | (24) 11753 | (24) Rear Defog Indicator Control | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) GN / VT | (25) 11755 | (25) HVAC Air Conditioning Request Indicator Control | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) BN / BU | (26) 11756 | (26) HVAC Heat Request Indicator Control | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) BN | (27) 11746 | (27) HVAC Air Conditioning Request Switch Signal | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) BU / BN | (28) 11747 | (28) HVAC Heat Request Switch Signal | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |

### A22 Radio Control X2



5278781

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1123
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series( GY)

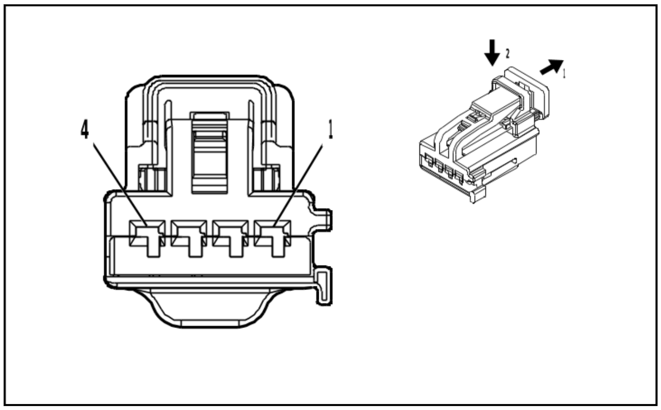
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## A22 Radio Control X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| GY | 0 | — | LVDS | Low Voltage Differential Signaling Cable | I | — |

### A23C Liftgate Latch (TB4)



5137287

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 15509333
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 YESC Series( BK)

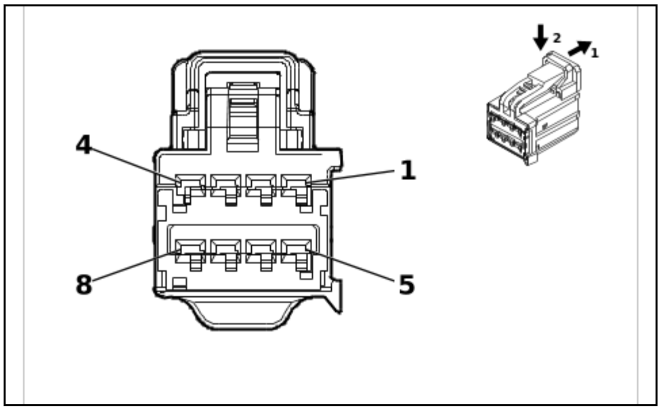
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## A23C Liftgate Latch (TB4)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GY | (1) 1303 | (1) Liftgate Ajar Switch Signal 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 6128 | (3) Rear Closure Unlatch Actuator Unlatch Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / BK | (4) 2680 | (4) Lock Actuators Unlock Control 2 | (4) I | (4) — |

## A23C Liftgate Latch (TB5 / TCP)



5377684

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 15509366
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 Kaizen Series( BK)

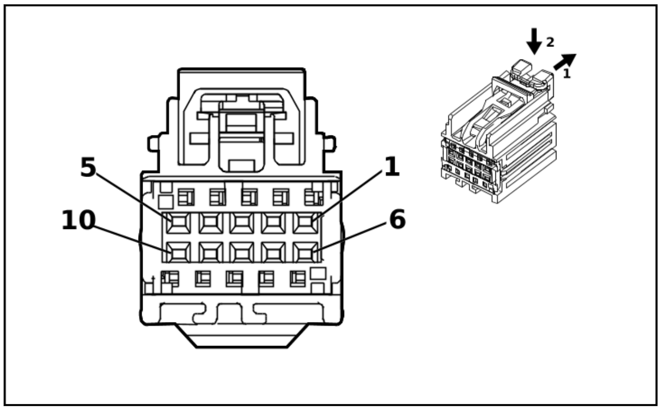
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## A23C Liftgate Latch (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1 | (3) BU / GY | (3) 4682 | (3) Rear Closure Cinch Latch Motor Release Control | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) BN | (4) 4681 | (4) Rear Closure Cinch Latch Motor Cinch Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / VT | (5) 4656 | (5) Rear Closure Object Sensor Low Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GY / VT | (6) 4678 | (6) Rear Closure Latch Unlatch Status | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) YE / BK | (7) 8085 | (7) Rear Closure Latch Primary Status | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) WH / GN | (8) 8084 | (8) Rear Closure Latch Neutral Status | (8) I | (8) — |

## A23D Front Side Door Latch - Driver



4622549

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

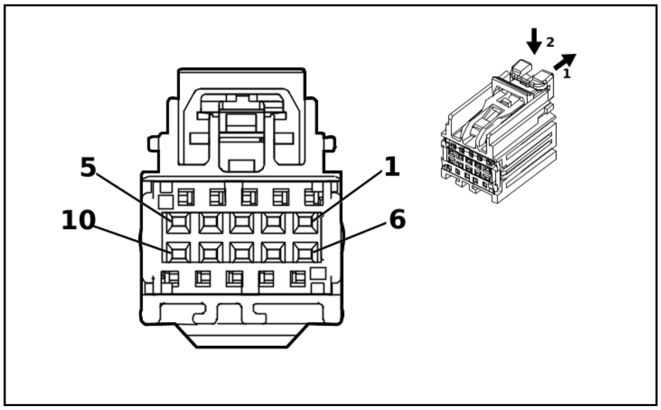
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### A23D Front Side Door Latch - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY | (1) 745 | (1) Left Front Door Ajar Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / GY | (2) 126 | (2) Left Front Door Open Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1150 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / VT | (4) 4258 | (4) Left Front Door Lock Status Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) GY | (7) 2681 | (7) Left Front Door Lock Actuator Lock Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 2679 | (8) Lock Actuators Unlock Control 1 | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |

## A23LR Rear Side Door Latch - Left



4622549

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

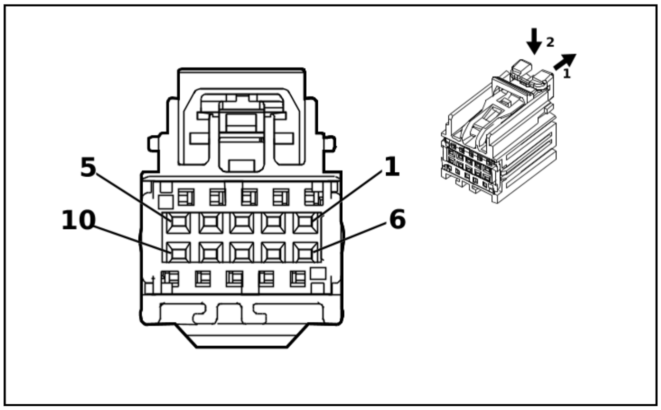
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### A23LR Rear Side Door Latch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY | (1) 747 | (1) Left Rear Door Ajar Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / WH | (2) 3269 | (2) Child Security Lock Actuator Status Signal Left Rear | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1150 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / BU | (4) 4648 | (4) Left Rear Door Lock Status Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BU / YE | (7) 1091 | (7) Left Rear Door Lock Actuator Lock Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) WH | (8) 2679 | (8) Lock Actuators Unlock Control 1 | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) WH / BU | (9) 3266 | (9) Child Security Lock Motor Lock Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

### A23P Front Side Door Latch - Passenger



4622549

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

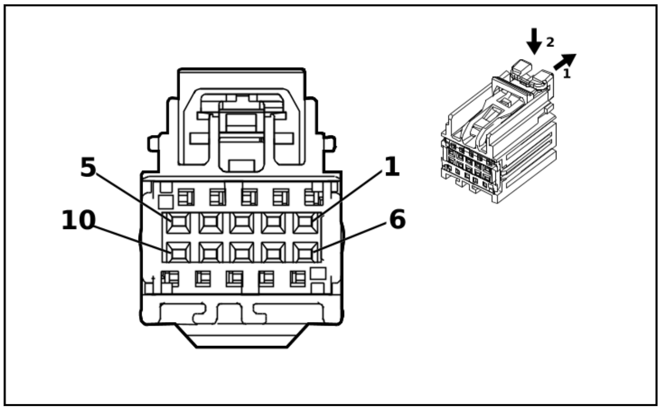
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A23P Front Side Door Latch - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) VT | (2) 4259 | (2) Right Front Door Lock Status Signal | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 1250 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GY | (5) 746 | (5) Right Front Door Ajar Switch Signal | (5) I | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GY / BK | (8) 2680 | (8) Lock Actuators Unlock Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) YE / GN | (9) 2682 | (9) Right Front Door Lock Actuator Lock Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

## A23RR Rear Side Door Latch - Right



4622549

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 7289-5068-60
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Kaizen Series( GN)

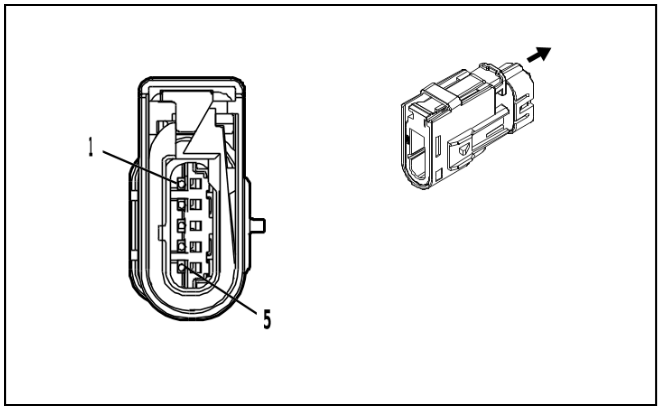
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A23RR Rear Side Door Latch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) WH / GY | (2) 4649 | (2) Right Rear Door Lock Status Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1250 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY / BK | (4) 3268 | (4) Child Security Lock Actuator Status Signal Right Rear | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GY | (5) 748 | (5) Right Rear Door Ajar Switch Signal | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) WH / BU | (7) 3266 | (7) Child Security Lock Motor Lock Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) GY / BK | (8) 2680 | (8) Lock Actuators Unlock Control 2 | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) VT / WH | (9) 1094 | (9) Right Rear Door Lock Actuator Lock Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |

### A24D Front Side Door Outside Handle - Left (- ( BOR / BOY ))



4808325

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: SRVWSB-02A-DK
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( BK)

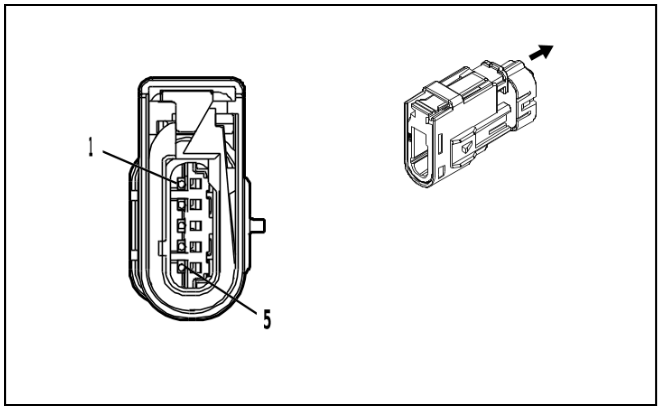
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## A24D Front Side Door Outside Handle - Left (- ( BOR / BOY ))

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 2675 | (1) Left Front Exterior Door Handle Switch Unlock Signal | (1) I | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BK | (5) 1150 | (5) Ground | (5) I | (5) — |

### A24D Front Side Door Outside Handle - Left (( BOR / BOY ))



4808321

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: SRVWSB-05A-AH
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( GY)

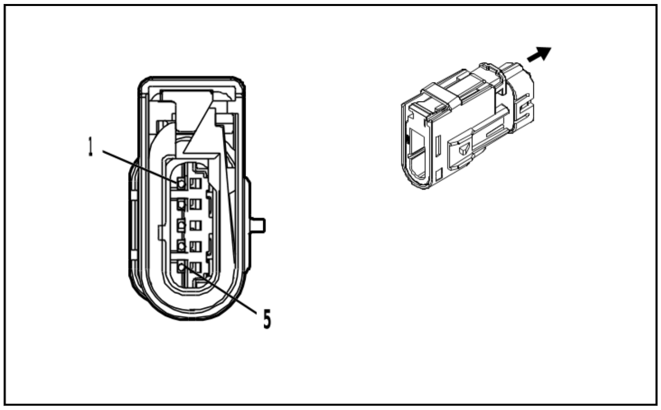
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## A24D Front Side Door Outside Handle - Left (( BOR / BOY ))

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 2675 | (1) Left Front Exterior Door Handle Switch Unlock Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / VT | (2) 1940 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BK | (3) 2738 | (3) Near Field Communication Module LIN Bus 1 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1150 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1151 | (5) Signal Ground | (5) I | (5) — |

### A24LR Rear Side Door Outside Handle - Left



4808325

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: SRVWSB-02A-DK
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( BK)

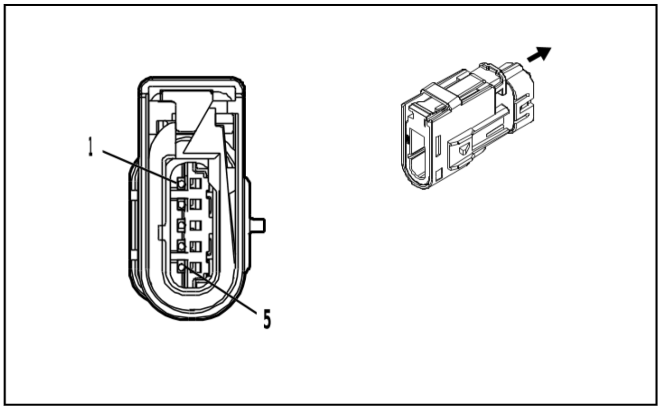
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## A24LR Rear Side Door Outside Handle - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / VT | (1) 4994 | (1) Left Rear Door Exterior Switch Unlock Signal | (1) II | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BK | (5) 1150 | (5) Ground | (5) I | (5) — |

### A24P Front Side Door Outside Handle - Right



4808325

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: SRVWSB-02A-DK
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( BK)

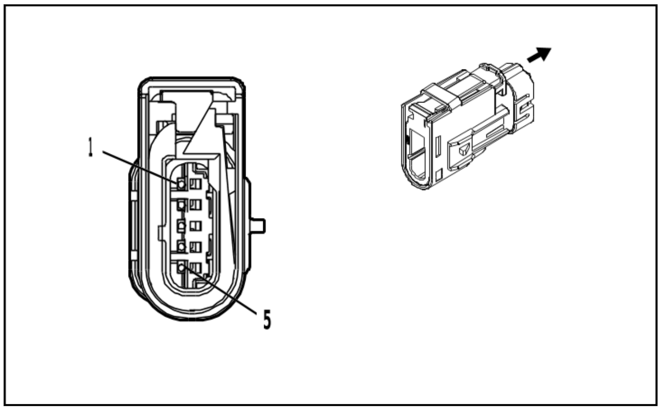
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## A24P Front Side Door Outside Handle - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / VT | (1) 2676 | (1) Right Front Door Exterior Switch Unlock Signal | (1) II | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1251 | (5) Signal Ground | (5) I | (5) — |

## A24RR Rear Side Door Outside Handle - Right



4808325

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: SRVWSB-02A-DK
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way M 1.2 Series, Sealed( BK)

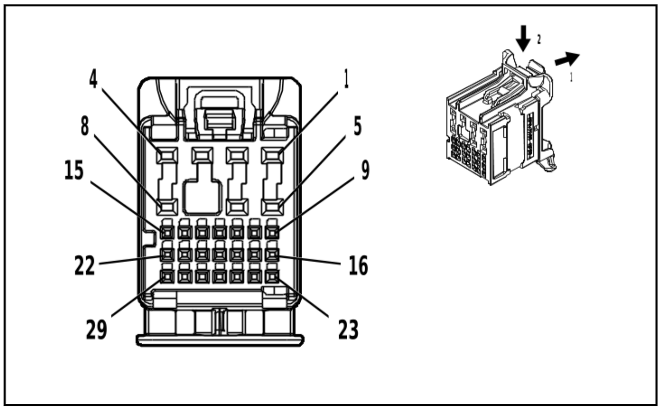
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

### A24RR Rear Side Door Outside Handle - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / BU | (1) 4995 | (1) Right Rear Door Exterior Switch Unlock Signal | (1) II | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BK | (5) 1250 | (5) Ground | (5) I | (5) — |

## A26 Heater and Air Conditioning User Interface Control - Front



4584346

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series( GN)

## Terminal Part Information

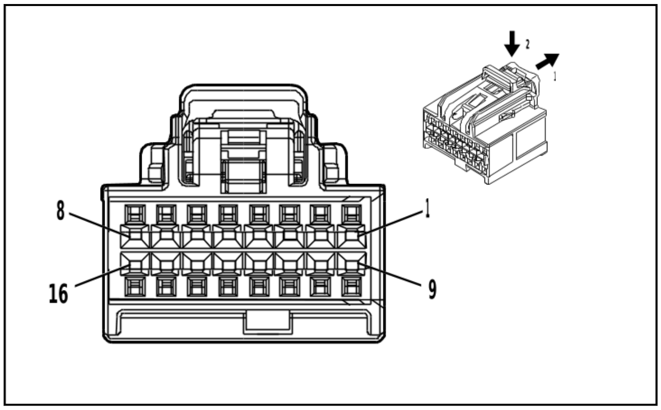
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## A26 Heater and Air Conditioning User Interface Control - Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / YE | (1) 11748 | (1) HVAC Indicator Supply Voltage | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / WH | (2) 1851 | (2) Signal Ground | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / BU | (3) 11762 | (3) HVAC Temperature 1 Encoder Phase A Signal | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / WH | (4) 11763 | (4) HVAC Temperature 1 Encoder Phase B Signal | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / GY | (5) 11766 | (5) HVAC Temperature 2 Encoder Phase A Signal | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) GY / WH | (6) 11767 | (6) HVAC Temperature 2 Encoder Phase B Signal | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) GY / GN | (8) 4636 | (8) HVAC System Enable Signal | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) YE | (9) 11737 | (9) Front Defrost Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / WH | (10) 292 | (10) Rear Defogger Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) VT | (11) 11738 | (11) HVAC Fan Up Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 11744 | (12) HVAC Fan Down Switch Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) GN | (13) 11745 | (13) HVAC Auto Mode Switch Signal | (13) I | (13) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (14) 14 | (14) 0.35 | (14) GN / YE | (14) 11757 | (14) HVAC White Backlighting Intensity Control | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GN / BN | (15) 11758 | (15) HVAC Red Backlighting Intensity Control | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GN / WH | (16) 11759 | (16) HVAC Blue Backlighting Intensity Control | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GY / VT | (17) 11760 | (17) HVAC Amber Backlighting Intensity Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BN / WH | (18) 11761 | (18) HVAC White Fan Backlighting Intensity Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) BK / YE | (19) 1704 | (19) Sensor Low Reference | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / BK | (20) 1923 | (20) Auxiliary HVAC Switch Signal | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) BN / GN | (21) 11754 | (21) HVAC Auto Mode Indicator Control | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) GN / GY | (22) 11749 | (22) HVAC System Enable Indicator Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) BU / VT | (23) 11752 | (23) Front Defrost Indicator Control | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) YE / VT | (24) 11753 | (24) Rear Defog Indicator Control | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) GN / VT | (25) 11755 | (25) HVAC Air Conditioning Request Indicator Control | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) BN / BU | (26) 11756 | (26) HVAC Heat Request Indicator Control | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) BN | (27) 11746 | (27) HVAC Air Conditioning Request Switch Signal | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) BU / BN | (28) 11747 | (28) HVAC Heat Request Switch Signal | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |

### A34 Heater and Air Conditioning Auxiliary Control (5W4 / 9C1)



4873243

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series( BK)

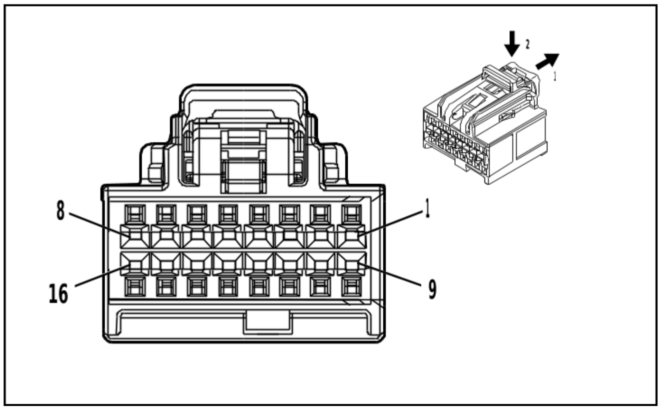
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84619127 | J-35616-64B (L-BU) | J-38125-215A |

## A34 Heater and Air Conditioning Auxiliary Control (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / BK | (7) 2211 | (7) Rear Blower Motor Speed Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.75 | (10) RD / BN | (10) 7540 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1351 | (11) Signal Ground | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / YE | (12) 4984 | (12) AUTOSAR CAN Bus [-] 5 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) BU / YE | (15) 4984 | (15) AUTOSAR CAN Bus [-] 5 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |

### A34 Heater and Air Conditioning Auxiliary Control (AZ3 - (5W4 / 9C1))



4873243

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

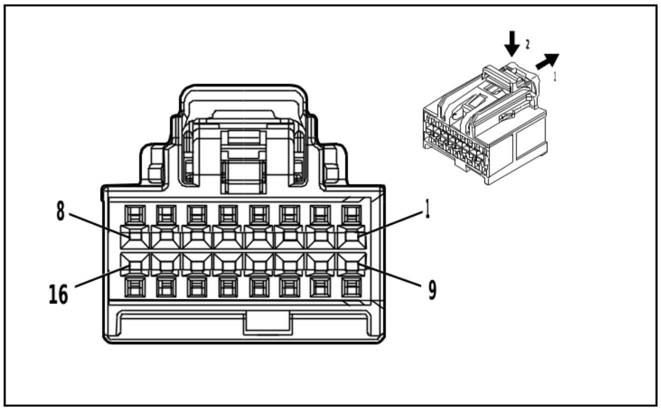
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A34 Heater and Air Conditioning Auxiliary Control (AZ3 - (5W4 / 9C1))

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / BK | (7) 2211 | (7) Rear Blower Motor Speed Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) RD / BN | (10) 7540 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1451 | (11) Signal Ground | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / YE | (12) 4984 | (12) AUTOSAR CAN Bus [-] 5 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) BU / YE | (15) 4984 | (15) AUTOSAR CAN Bus [-] 5 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |

### A34 Heater and Air Conditioning Auxiliary Control (D07)



4873243

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

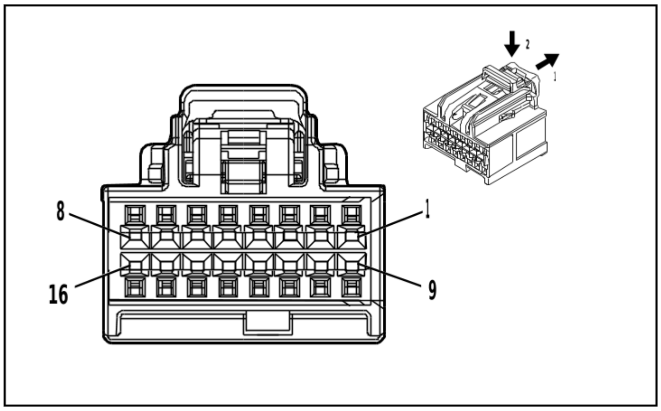
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A34 Heater and Air Conditioning Auxiliary Control (D07)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / BK | (7) 2211 | (7) Rear Blower Motor Speed Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) RD / BN | (10) 7540 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1451 | (11) Signal Ground | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / YE | (12) 4984 | (12) AUTOSAR CAN Bus [-] 5 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) BU / YE | (15) 4984 | (15) AUTOSAR CAN Bus [-] 5 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |

### A34 Heater and Air Conditioning Auxiliary Control (DCH)



4873243

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

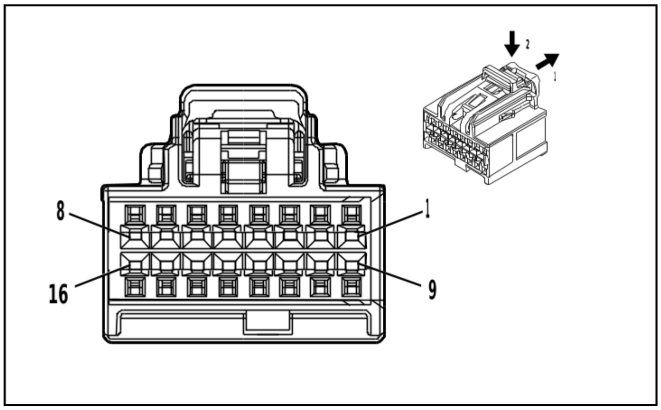
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A34 Heater and Air Conditioning Auxiliary Control (DCH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / BK | (7) 2211 | (7) Rear Blower Motor Speed Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) RD / BN | (10) 7540 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1451 | (11) Signal Ground | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / YE | (12) 4984 | (12) AUTOSAR CAN Bus [-] 5 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| 14 - 16 | — | — | — | Not Occupied | — | — |

### A34 Heater and Air Conditioning Auxiliary Control (DCK)



4873243

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

## Terminal Part Information

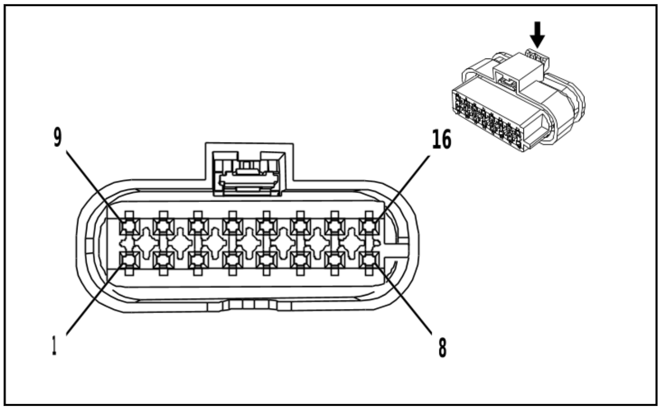
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## A34 Heater and Air Conditioning Auxiliary Control (DCK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / BK | (7) 2211 | (7) Rear Blower Motor Speed Control | (7) I | (7) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / WH | (9) 4985 | (9) AUTOSAR CAN Bus [+] 5 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) RD / BN | (10) 7540 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1451 | (11) Signal Ground | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / YE | (12) 4984 | (12) AUTOSAR CAN Bus [-] 5 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) BU / YE | (15) 4984 | (15) AUTOSAR CAN Bus [-] 5 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |

**A38 Reductant Tank Fluid Supply Pump Module**



4259227

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 33210848
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.2 MLK Series, Sealed( BK)

## Terminal Part Information

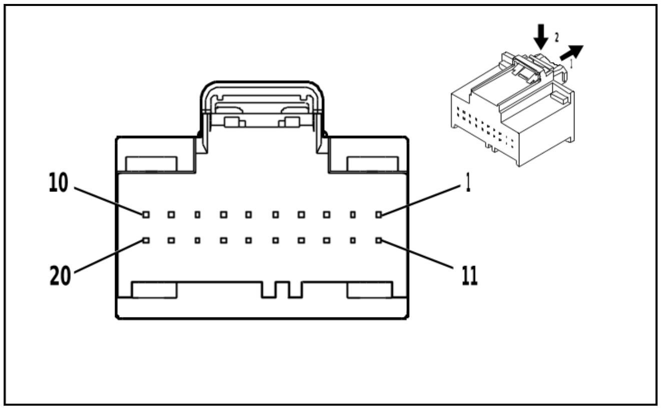
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## A38 Reductant Tank Fluid Supply Pump Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 3244 | (1) Diesel Exhaust Fluid Tank Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 3245 | (2) Diesel Exhaust Fluid Tank Temperature Sensor Low Reference | (2) I | (2) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) BU | (3) 3107 | (3) Diesel Exhaust Fluid Pressure Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU | (4) 3108 | (4) Diesel Exhaust Fluid Pressure Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN | (5) 3106 | (5) Diesel Exhaust Fluid Pressure Sensor 5 Volt Reference | (5) I | (5) — |
| (6) 6 | (6) 1 | (6) BU | (6) 4318 | (6) Diesel Exhaust Fluid Tank Heater Low Control | (6) I | (6) — |
| (7) 7 | (7) 1 | (7) WH | (7) 3103 | (7) Diesel Exhaust Fluid Smart Pump Control | (7) I | (7) — |
| (8) 8 | (8) 1 | (8) BN | (8) 3875 | (8) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 2 | (8) I | (8) — |
| (9) 9 | (9) 1 | (9) YE | (9) 3677 | (9) Diesel Exhaust Fluid Reservoir Heater Control | (9) I | (9) — |
| 10 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 1 | (12) BN | (12) 3676 | (12) Diesel Exhaust Fluid Heating Tank 2 Heater Control | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 1 | (14) BU | (14) 2937 | (14) Diesel Exhaust Fluid Pump Motor Stator Low Reference | (14) I | (14) — |
| (15) 15 | (15) 1 | (15) YE | (15) 3876 | (15) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 3 | (15) I | (15) — |
| (16) 16 | (16) 1 | (16) BN | (16) 2936 | (16) Diesel Exhaust Fluid Heating Tank 2 Heater Control Low | (16) I | (16) — |

## A103 Roof Console



5112891

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 31410-0205
- Service Connector: 13525990
- Description: 20-Way F 0.64 Series( BK)

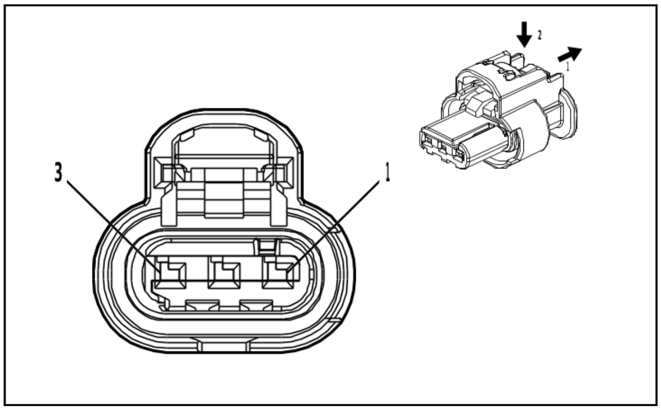
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13584547 | J-35616-64B (L-BU) | J-38125-215A |

## A103 Roof Console

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GN | (2) 4785 | (2) Interior Lamp Overhead Enable Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / WH | (3) 2369 | (3) Interior Lamp Overhead 2 Enable Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / YE | (4) 2903 | (4) Row 2 Dome Reading Lamp Interior Lamp Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BN / BU | (5) 2905 | (5) Row 2 Dome Reading Lamp 2 Interior Lamp Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / BN | (6) 2904 | (6) Row 2 Dome Reading Lamp Switch Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) VT / GY | (7) 2906 | (7) Row 2 Dome Reading Lamp 2 Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) VT / YE | (8) 2908 | (8) Row 3 Dome Reading Lamp Switch Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) YE / GY | (9) 2910 | (9) Row 3 Dome Reading Lamp 2 Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GN / WH | (10) 2854 | (10) Body Control Module LIN Bus 8 | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BU / WH | (11) 2907 | (11) Row 3 Dome Reading Lamp Interior Lamp Control | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BN / VT | (12) 2909 | (12) Row 3 Dome Reading Lamp 2 Interior Lamp Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BK / BN | (13) 654 | (13) Cellular Telephone Microphone Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BU | (14) 655 | (14) Cellular Telephone Microphone Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GN / BK | (15) 2515 | (15) Telematics Switch Supply Voltage | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GN / WH | (16) 2514 | (16) Telematics Switch Signal | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) YE / VT | (17) 2516 | (17) Telematics Switch Green LED Indicator Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BN / WH | (18) 2517 | (18) Telematics Switch Red LED Indicator Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GN / BK | (19) 10652 | (19) Radio LIN Bus 1 | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BK | (20) 1850 | (20) Ground | (20) I | (20) — |

## B1 Air Conditioning Refrigerant Pressure Sensor



4581126

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

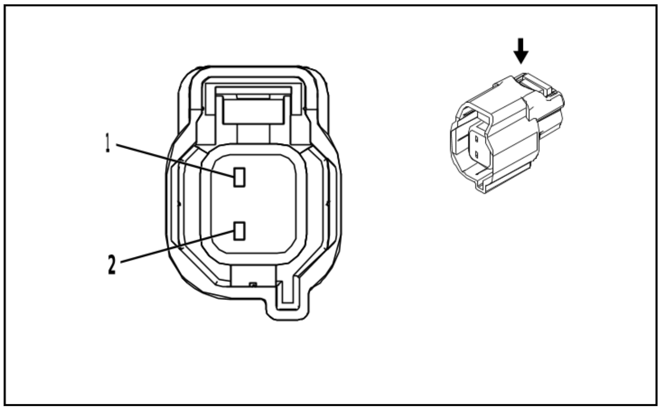
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### B1 Air Conditioning Refrigerant Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / RD | (1) 480 | (1) Engine Control Vehicle Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 380 | (2) Air Conditioning Refrigerant Pressure Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 626 | (3) Engine Control Vehicle Sensors Low Reference 1 | (3) I | (3) — |

### B5LF Front Wheel Speed Sensor - Left



2900396

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0026
- Service Connector: 19366856
- Description: 2-Way F 1.5 Series, Sealed( L-GY)

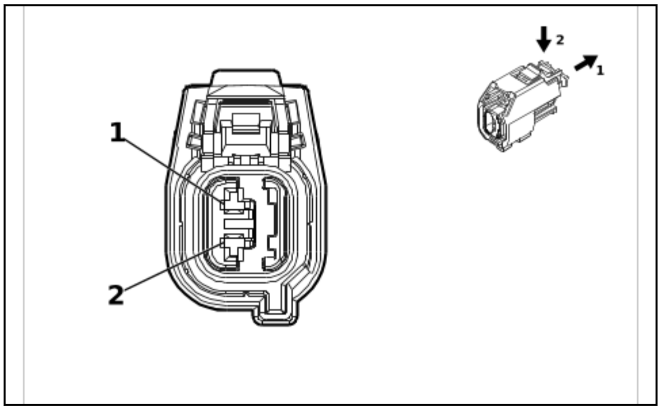
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B5LF Front Wheel Speed Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / WH | (1) 7064 | (1) Left Front Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 830 | (2) Left Front Wheel Speed Sensor Signal | (2) I | (2) — |

### B5LR Rear Wheel Speed Sensor - Left



5666214

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed( GY)

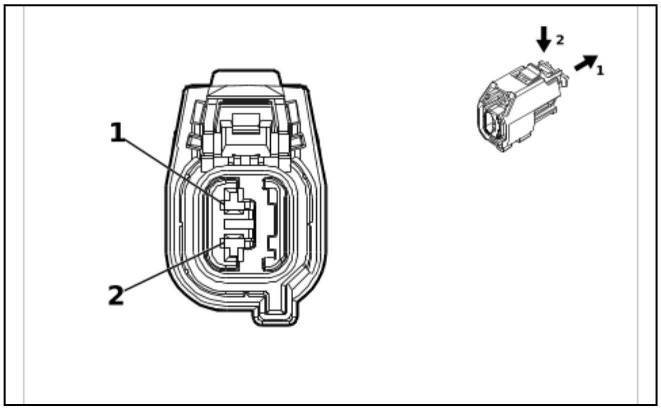
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## B5LR Rear Wheel Speed Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BK | (1) 7127 | (1) Left Rear Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 884 | (2) Left Rear Wheel Speed Sensor Signal | (2) I | (2) — |

### B5RF Front Wheel Speed Sensor - Right



5666214

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33189092
- Service Connector: 85526683
- Description: 2-Way F 1.5 OCS Series, Sealed( GY)

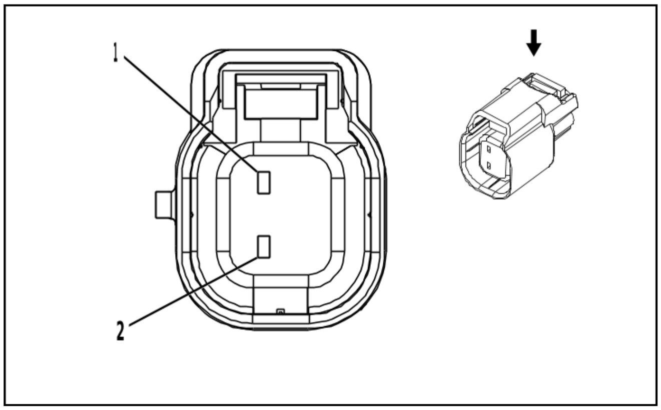
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## B5RF Front Wheel Speed Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BN | (1) 7065 | (1) Right Front Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 872 | (2) Right Front Wheel Speed Sensor Signal | (2) I | (2) — |

### B5RR Rear Wheel Speed Sensor - Right



4115616

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0046
- Service Connector: 19366860
- Description: 2-Way F 1.5 Series, Sealed( BK)

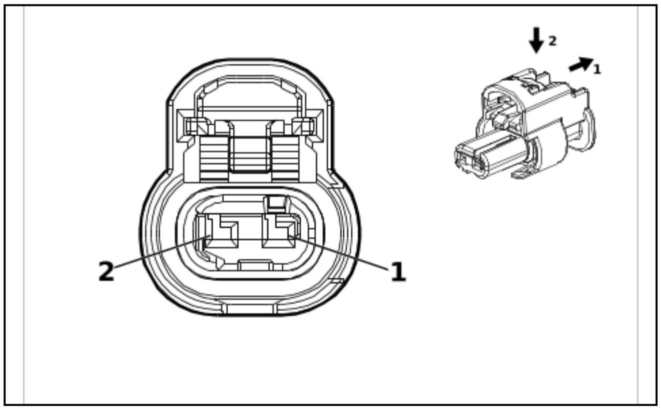
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B5RR Rear Wheel Speed Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / YE | (1) 7128 | (1) Right Rear Wheel Speed Sensor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 882 | (2) Right Rear Wheel Speed Sensor Signal | (2) I | (2) — |

### B9 Ambient Air Temperature Sensor



4649903

**Connector Part Information**

- Harness Type: Air Shutter Jumper
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

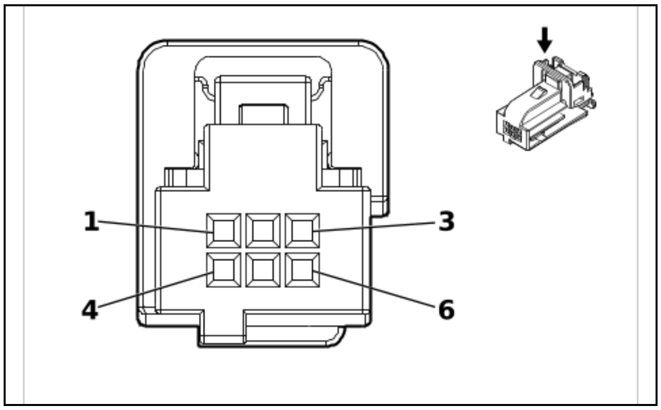
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B9 Ambient Air Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / GY | (1) 626 | (1) Engine Control Vehicle Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GY | (2) 636 | (2) Ambient Air Temperature Sensor Signal | (2) I | (2) — |

### B10D Sun Load and Ambient Light and Security Indicator Sensor



2282896

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2294663-1
- Service Connector: 85587649
- Description: 6-Way F 0.64 Micro-Quadlock Series( BK)

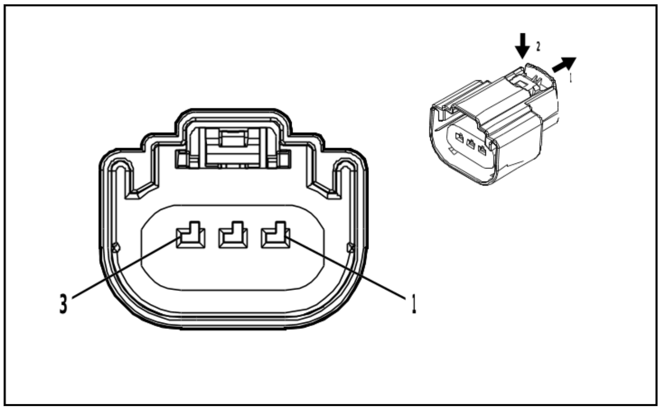
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B10D Sun Load and Ambient Light and Security Indicator Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY | (1) 590 | (1) Driver Solar Sensor Signal | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) WH / BU | (3) 278 | (3) Ambient Light Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / WH | (4) 734 | (4) Inside Air Temperature Sensor Signal | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BK / YE | (6) 407 | (6) Sensor Low Reference | (6) I | (6) — |

### B11LF Front Suspension 4 Corner Leveling System Position Sensor - Left (F47)



4569745

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

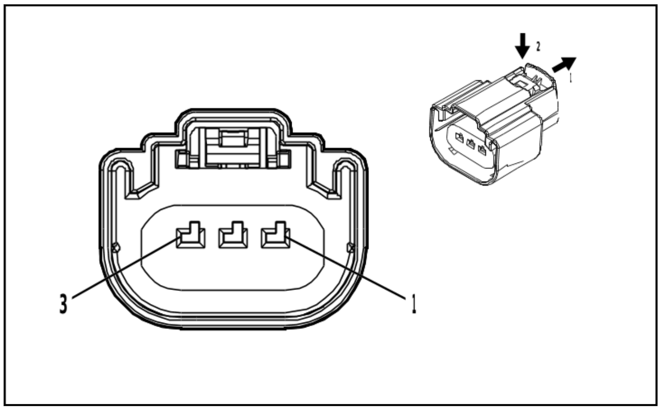
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B11LF Front Suspension 4 Corner Leveling System Position Sensor - Left (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / RD | (1) 1205 | (1) Left Front Suspension Position Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 1206 | (2) Left Front Suspension Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / WH | (3) 1207 | (3) Left Front Suspension Position Sensor Signal | (3) I | (3) — |

## B11LR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Left (F47)



4569745

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

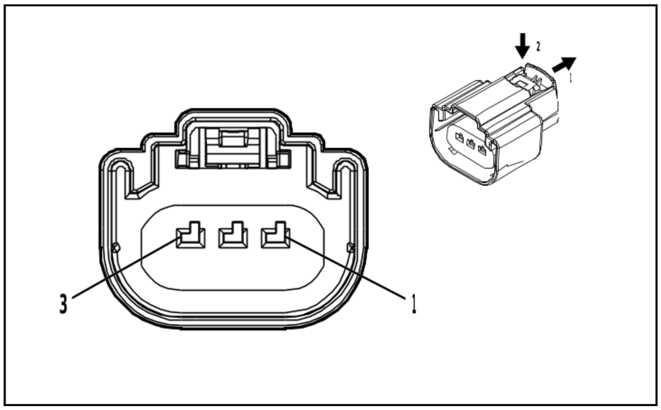
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B11LR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Left (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / RD | (1) 1208 | (1) Left Rear Suspension Position Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 1209 | (2) Left Rear Suspension Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 1210 | (3) Left Rear Suspension Position Sensor Signal | (3) I | (3) — |

## B11RF Front Suspension 4 Corner Leveling System Position Sensor - Right (F47)



4569745

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

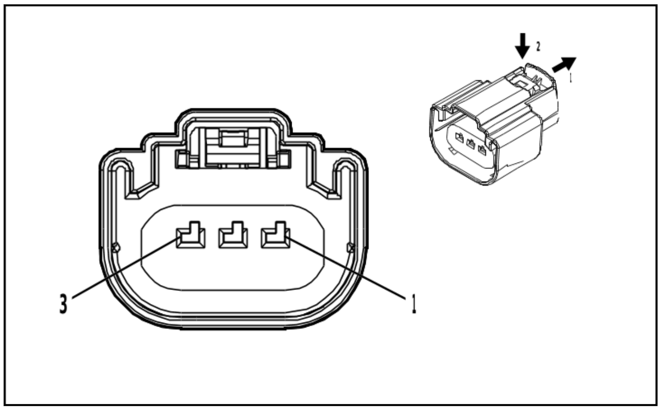
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### B11RF Front Suspension 4 Corner Leveling System Position Sensor - Right (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / RD | (1) 1211 | (1) Right Front Suspension Position Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 1212 | (2) Right Front Suspension Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / WH | (3) 1213 | (3) Right Front Suspension Position Sensor Signal | (3) I | (3) — |

## B11RR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Right (F47)



4569745

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

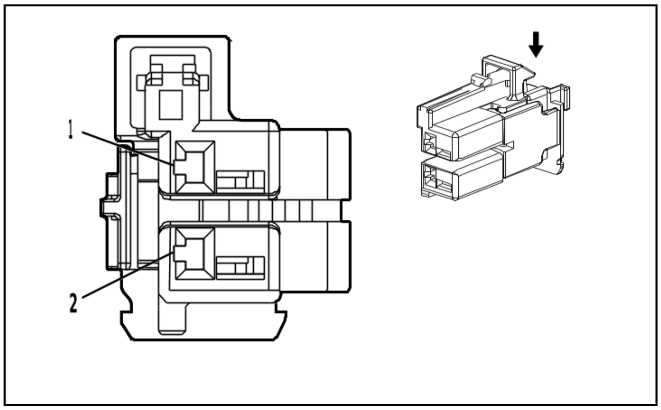
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### B11RR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Right (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / RD | (1) 1214 | (1) Right Rear Suspension Position Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 1215 | (2) Right Rear Suspension Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / GY | (3) 1216 | (3) Right Rear Suspension Position Sensor Signal | (3) I | (3) — |

### B13 Automatic Transmission Fluid Temperature Sensor



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

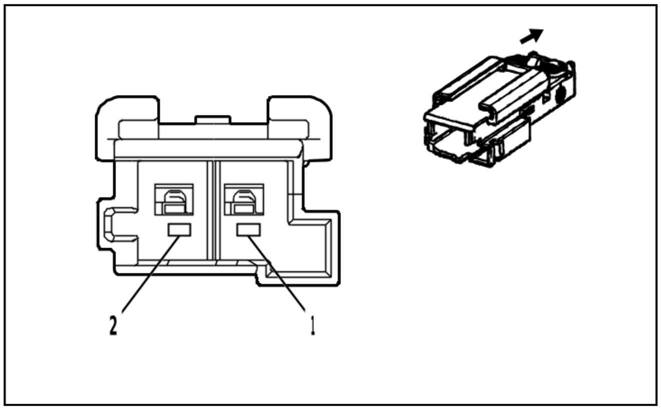
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B13 Automatic Transmission Fluid Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BU / BN | (1) 586 | (1) Transmission Fluid Temperature Sensor Low Reference | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / YE | (2) 585 | (2) Transmission Fluid Temperature Sensor Signal | (2) I | (2) — |

### B14A Automatic Transmission Output Speed Sensor



4672593

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( BU)

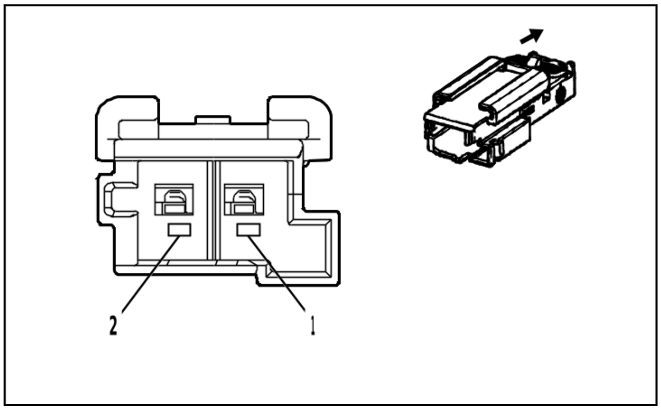
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14A Automatic Transmission Output Speed Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / OG | (1) 6358 | (1) Output Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 4170 | (2) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B14C Automatic Transmission Input Speed Sensor



4672611

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( GN)

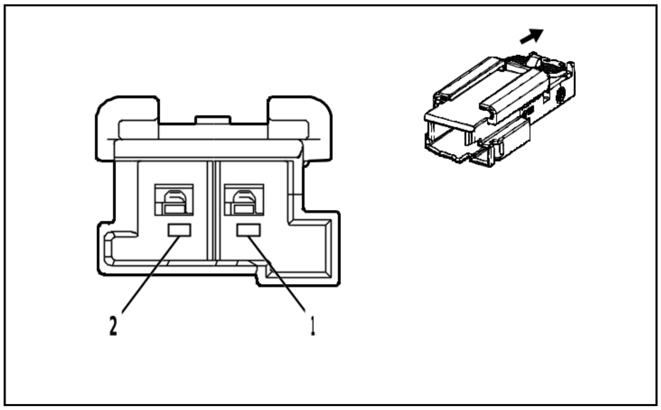
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14C Automatic Transmission Input Speed Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 6353 | (1) Input Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4171 | (2) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B14DA Automatic Transmission Intermediate Speed Sensor 1



4663490

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( NA)

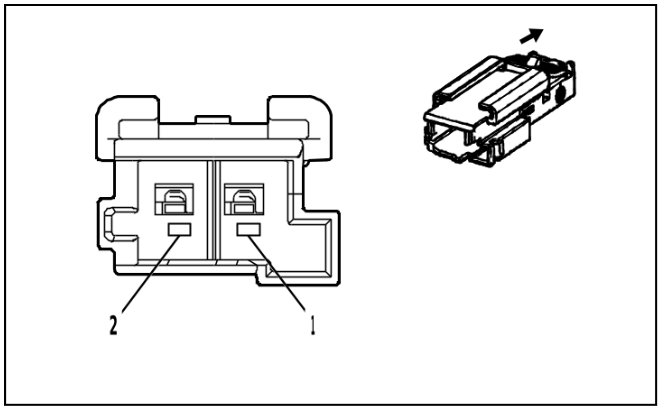
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14DA Automatic Transmission Intermediate Speed Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GN | (1) 4510 | (1) Transmission Intermediate Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 4170 | (2) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B14DB Automatic Transmission Intermediate Speed Sensor 2



4672593

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2340311-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( BU)

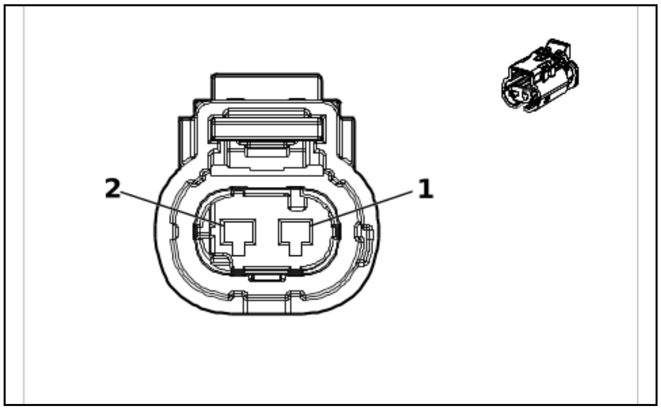
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## B14DB Automatic Transmission Intermediate Speed Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 6254 | (1) Transmission Input Speed Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4171 | (2) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |

### B20A Brake Fluid Level Indicator Switch



6776339

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 10530497
- Service Connector: 86308598
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

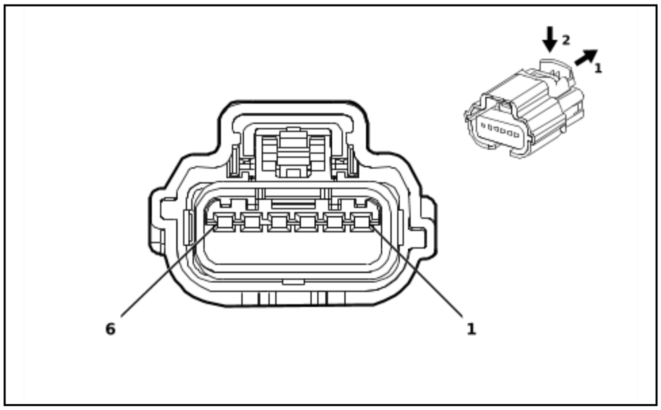
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B20A Brake Fluid Level Indicator Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / GY | (1) 333 | (1) Brake Fluid Level Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / WH | (2) 1151 | (2) Signal Ground | (2) I | (2) — |

### B22 Brake Pedal Position Sensor



4773396

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 31404-7810
- Service Connector: 84683650
- Description: 6-Way F 64 Series, Sealed( NA)

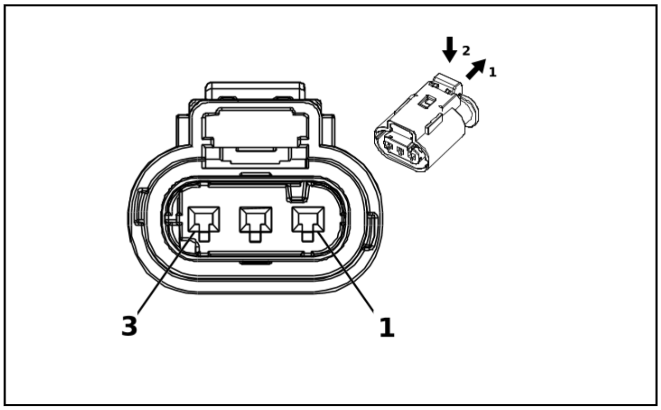
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B22 Brake Pedal Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / BN | (1) 5360 | (1) Brake Apply Sensor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 5359 | (2) Brake Apply Sensor Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / YE | (3) 5361 | (3) Brake Apply Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / GN | (4) 5380 | (4) Brake Position Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / GY | (5) 626 | (5) Engine Control Vehicle Sensors Low Reference 1 | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / RD | (6) 480 | (6) Engine Control Vehicle Sensors 5 Volt Reference 1 | (6) I | (6) — |

## B23 Camshaft Position Sensor



2717069

**Connector Part Information**
- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 10010341
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

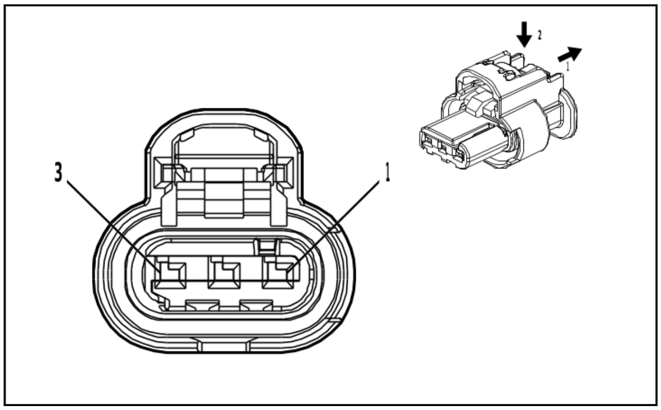
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B23 Camshaft Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) Intake Camshaft Position Sensor 1 Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) Intake Camshaft Position Sensor Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) Intake Camshaft Position Sensor 1 | (3) I | (3) — |

### B23E Camshaft Position Sensor - Exhaust (LZ0)



4581126

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B23E Camshaft Position Sensor - Exhaust (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / YE | (1) 5297 | (1) Exhaust Camshaft Position Sensor 1 Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 5296 | (2) Exhaust Camshaft Position Sensor Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / BK | (3) 5273 | (3) Exhaust Camshaft Position Sensor 1 | (3) I | (3) — |

### B24 Mobile Telephone Microphone

—

**Connector Part Information**

- Harness Type: Roof Console
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

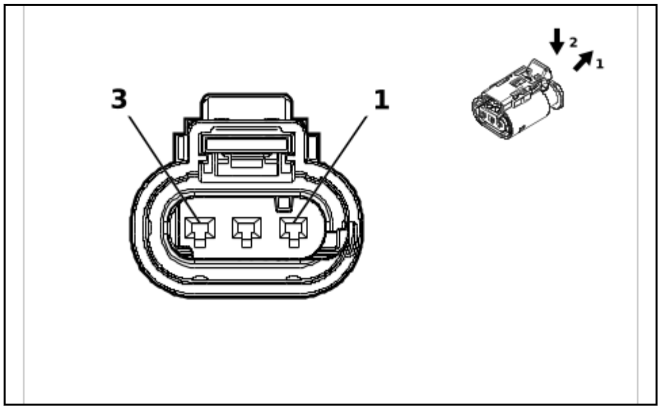
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B24 Mobile Telephone Microphone

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | — | BK / BN | 654 | Cellular Telephone Microphone Low Reference | I | — |
| B | — | BU | 655 | Cellular Telephone Microphone Signal | I | — |

### B26 Crankshaft Position Sensor (L84 / L87)



6851172

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10531901
- Service Connector: 84601390
- Description: 3-Way F 1.2 MLK Series, Sealed( BK)

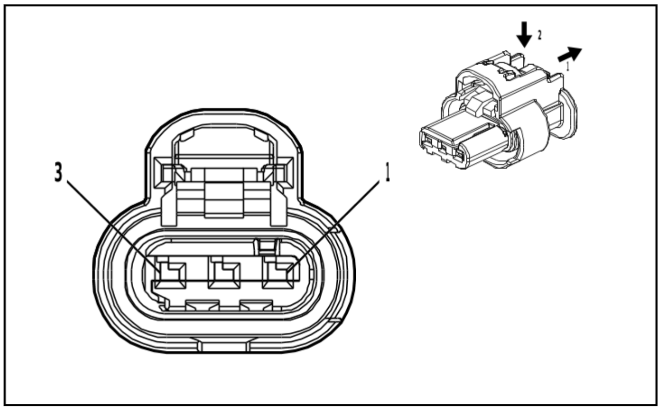
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B26 Crankshaft Position Sensor (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 6271 | (1) Crankshaft Position Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / VT | (2) 6272 | (2) Crankshaft Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / BU | (3) 6270 | (3) Crankshaft Position Sensor Voltage | (3) I | (3) — |

## B26 Crankshaft Position Sensor (LZ0)



4581126

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

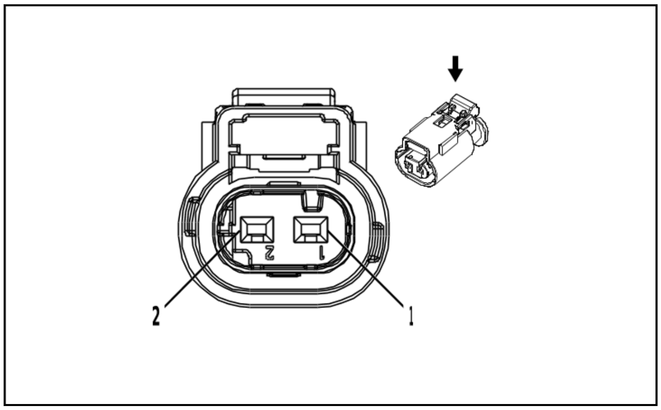
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B26 Crankshaft Position Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 6270 | (1) Crankshaft Position Sensor Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / VT | (2) 6272 | (2) Crankshaft Position Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN | (3) 6271 | (3) Crankshaft Position Sensor Signal | (3) I | (3) — |

## B34 Engine Coolant Temperature Sensor (L84 / L87)



2717066

**Connector Part Information**
- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

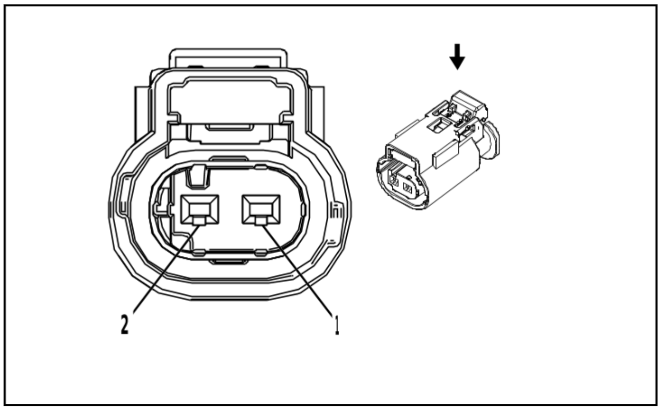
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B34 Engine Coolant Temperature Sensor (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 410 | (1) Engine Coolant Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |

### B34 Engine Coolant Temperature Sensor (LZ0)



2830969

**Connector Part Information**
- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 13503568
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed( D-GY)

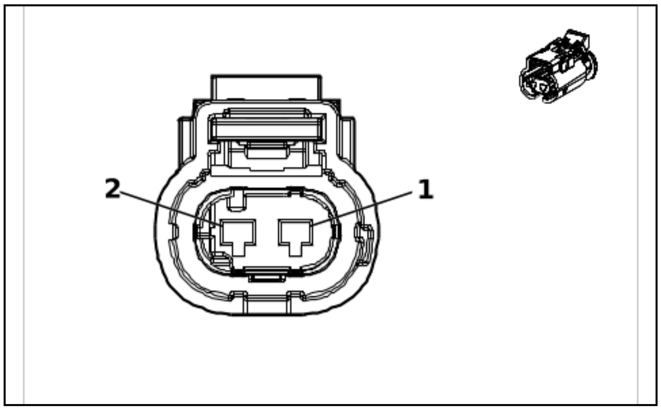
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B34 Engine Coolant Temperature Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 2988 | (1) Engine Outlet Coolant Temperature Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 626 | (2) Engine Control Vehicle Sensors Low Reference 1 | (2) I | (2) — |

### B34B Engine Coolant Temperature Sensor 2 (LZ0)



6860491

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 10530499
- Service Connector: 86308599
- Description: 2-Way F 1.2 MLK Series, Sealed( GY)

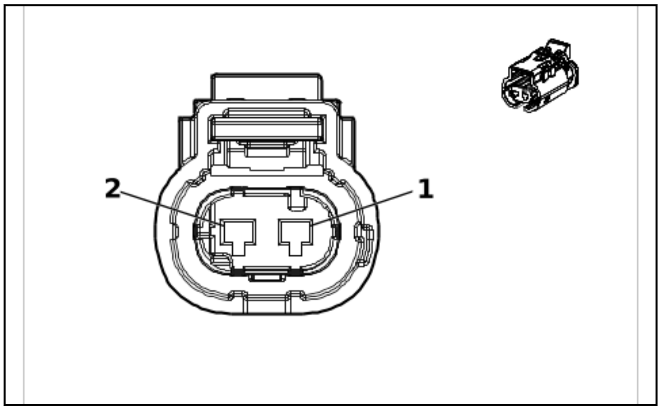
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B34B Engine Coolant Temperature Sensor 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BU | (1) 2408 | (1) Engine Inlet Coolant Temperature Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |

### B34K Charge Air Cooler Coolant Temperature Sensor - Inlet (LZ0)



6776339

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 10530497
- Service Connector: 86308598
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

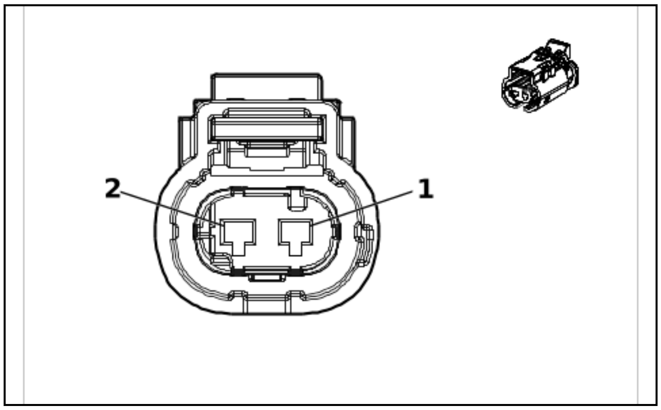
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B34K Charge Air Cooler Coolant Temperature Sensor - Inlet (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / BK | (1) 1422 | (1) Engine Water Charge Air Coolant Temperature Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 626 | (2) Engine Control Vehicle Sensors Low Reference 1 | (2) I | (2) — |

### B35 Engine Oil Level Indicator Switch



6776339

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 10530497
- Service Connector: 86308598
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

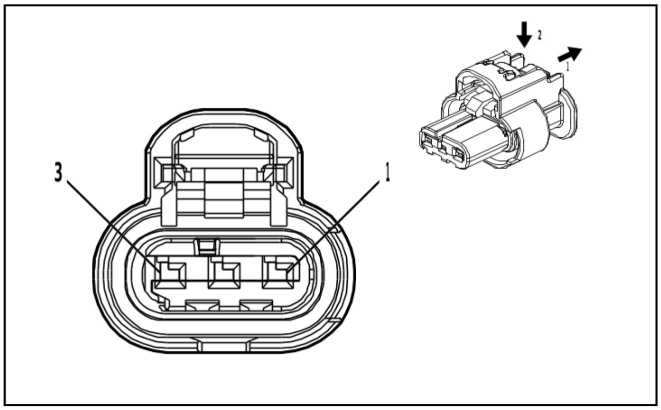
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B35 Engine Oil Level Indicator Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GN | (1) 1174 | (1) Oil Level Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BK / WH | (2) 6151 | (2) Engine Control Module Ground | (2) I | (2) — |

## B36 Engine Oil Temperature Sensor (LZ0)



4994602

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

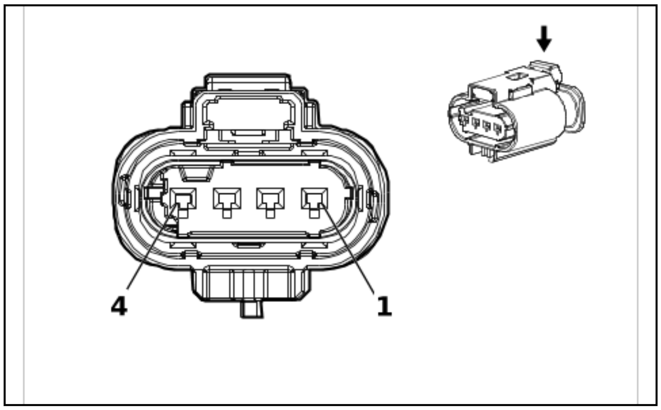
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B36 Engine Oil Temperature Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / GY | (1) 626 | (1) Engine Control Vehicle Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / BU | (2) 357 | (2) Oil Temperature Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT | (3) 7485 | (3) Engine Oil Temperature Sensor 2 Signal | (3) I | (3) — |

## B37B Engine Oil Pressure Sensor (L84 / L87)



5402120

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10531905
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed( BK)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B37B Engine Oil Pressure Sensor (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / YE | (1) 548 | (1) Engine Control Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BN | (2) 331 | (2) Oil Pressure Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / BU | (4) 357 | (4) Oil Temperature Sensor Signal | (4) I | (4) — |

## B37B Engine Oil Pressure Sensor (LZ0)

GRAPHIC
PENDING

6932387

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551875
- Service Connector: 19301717
- Description: 3-Way F 1.2 MLK Series, Sealed( BK)

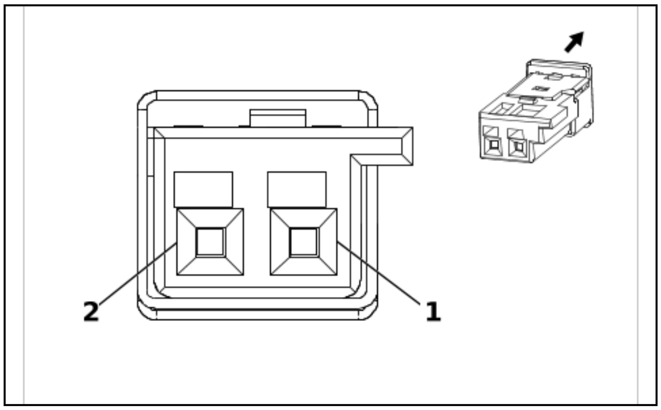
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B37B Engine Oil Pressure Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BN | (1) 331 | (1) Oil Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / RD | (3) 460 | (3) Engine Control Sensors 5 Volt Reference 1 | (3) I | (3) — |

### B39 Air Conditioning Evaporator Air Temperature Sensor



2780265

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2-1718333-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Micro-Quadlock Series( NA)

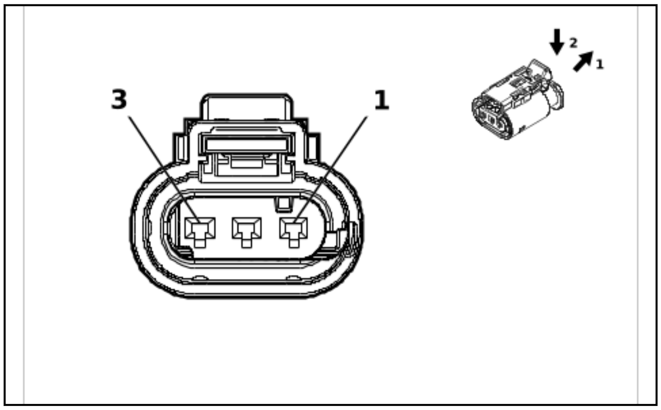
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B39 Air Conditioning Evaporator Air Temperature Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BN | (1) 6137 | (1) Air Conditioning Evaporator Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK / YE | (2) 407 | (2) Sensor Low Reference | (2) I | (2) — |

### B47 Fuel Pressure Sensor



6851172

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10531901
- Service Connector: 84601390
- Description: 3-Way F 1.2 MLK Series, Sealed( BK)

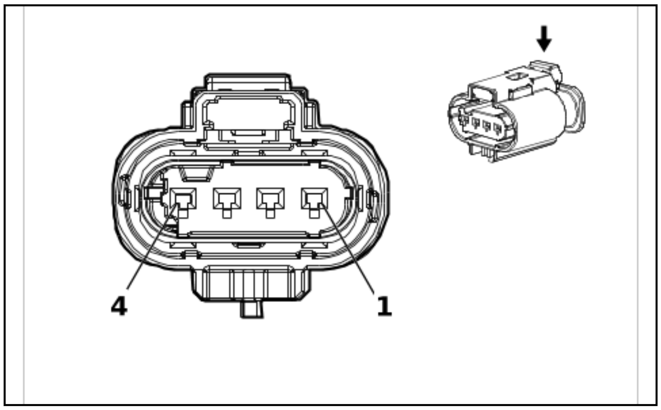
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B47 Fuel Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / RD | (1) 7445 | (1) Fuel Line Pressure Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 7447 | (2) Fuel Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 7446 | (3) Fuel Pressure Sensor Signal | (3) I | (3) — |

### B47B Fuel Rail Pressure Sensor (LZ0)



5402120

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10531905
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed( BK)

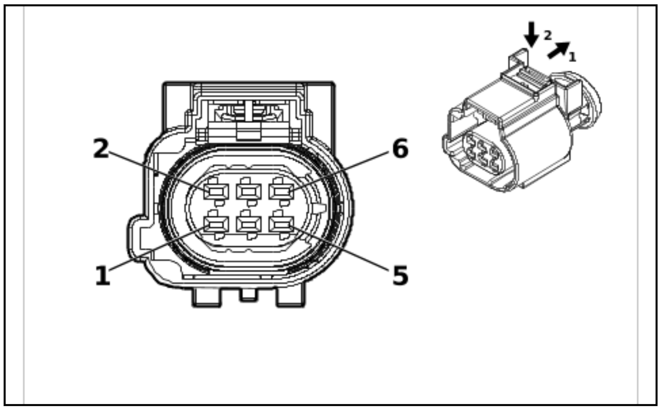
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B47B Fuel Rail Pressure Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / RD | (1) 2917 | (1) Fuel Rail Pressure Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / YE | (2) 2161 | (2) Fuel Rail Pressure Sensor 2 Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 2919 | (3) Fuel Rail Pressure Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / WH | (4) 2918 | (4) Fuel Rail Pressure Sensor Signal | (4) I | (4) — |

## B52C Heated Oxygen Sensor - Bank 1 Sensor 1



6312186

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2309220-2
- Service Connector: 85686357
- Description: 6-Way F 1.5 MCP Series, Sealed( BN)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### B52C Heated Oxygen Sensor - Bank 1 Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 6933 | (1) HO2S Pump Current Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 6934 | (2) HO2S Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / WH | (3) 3113 | (3) HO2S Heater Low Control Bank 1 Sensor 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5293 | (4) Powertrain Main Relay Fused Supply Voltage 4 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GN | (5) 6935 | (5) HO2S Pump Current Trim Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / GY | (6) 6936 | (6) HO2S Signal | (6) I | (6) — |

## B52D Heated Oxygen Sensor - Bank 1 Sensor 2

GRAPHIC
PENDING

6946679

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13562507
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed( GY)

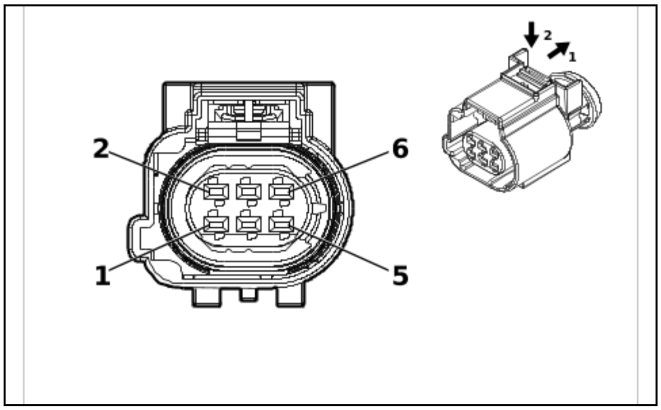
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B52D Heated Oxygen Sensor - Bank 1 Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / WH | (1) 3122 | (1) HO2S Heater Low Control Bank 1 Sensor 2 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT / BU | (2) 5294 | (2) Powertrain Main Relay Fused Supply Voltage 5 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / YE | (3) 3121 | (3) HO2S Low Signal Bank 1 Sensor 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) VT / BU | (4) 3120 | (4) HO2S High Signal Bank 1 Sensor 2 | (4) I | (4) — |

## B52E Heated Oxygen Sensor - Bank 2 Sensor 1



6312186

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2309220-2
- Service Connector: 85686357
- Description: 6-Way F 1.5 MCP Series, Sealed( BN)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### B52E Heated Oxygen Sensor - Bank 2 Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / WH | (1) 2570 | (1) Heated Oxygen Sensor 2 Pump Current Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 2571 | (2) Heated Oxygen Sensor 2 Common Bank 2 Sensor 1 Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / YE | (3) 3212 | (3) HO2S Heater Low Control Bank 2 Sensor 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT / BU | (4) 5294 | (4) Powertrain Main Relay Fused Supply Voltage 5 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU | (5) 2572 | (5) Heated Oxygen Sensor 2 Current Adjust Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GY | (6) 2573 | (6) Heated Oxygen Sensor 2 Collector Signal | (6) I | (6) — |

### B52F Heated Oxygen Sensor - Bank 2 Sensor 2

GRAPHIC
PENDING

6946679

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13562507
- Service Connector: 19330920
- Description: 4-Way F 1.2 Multilock Series, Sealed( GY)

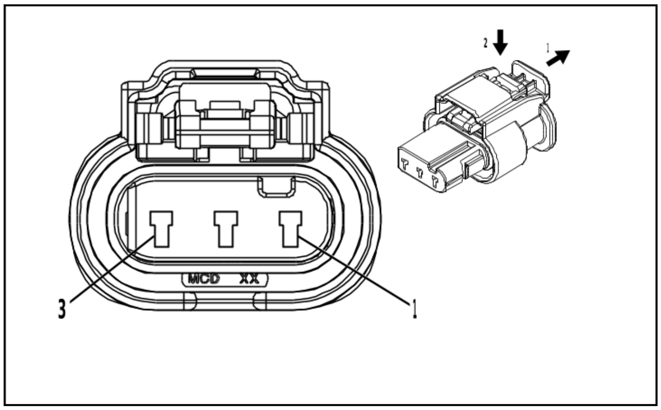
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B52F Heated Oxygen Sensor - Bank 2 Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BN | (1) 3223 | (1) HO2S Heater Low Control Bank 2 Sensor 2 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT / BU | (2) 5294 | (2) Powertrain Main Relay Fused Supply Voltage 5 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BU | (3) 3221 | (3) HO2S Low Signal Bank 2 Sensor 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) VT / GN | (4) 3220 | (4) HO2S High Signal Bank 2 Sensor 2 | (4) I | (4) — |

### B55 Engine Compartment Cover Switch



4421568

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 34900-3120
- Service Connector: 19368220
- Description: 3-Way F 1.2 MCON-LL Series, Sealed( BK)

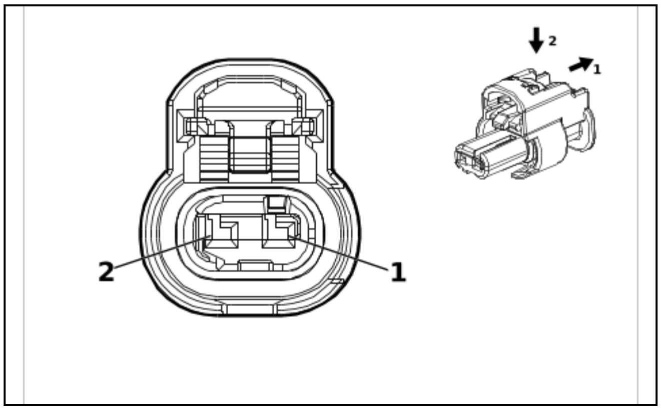
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B55 Engine Compartment Cover Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 4063 | (1) Hood Status A Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / GN | (2) 4064 | (2) Hood Status B Signal | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK | (3) 150 | (3) Ground | (3) I | (3) — |

### B58L Airbag Front End Discriminating Sensor - Left



4649903

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

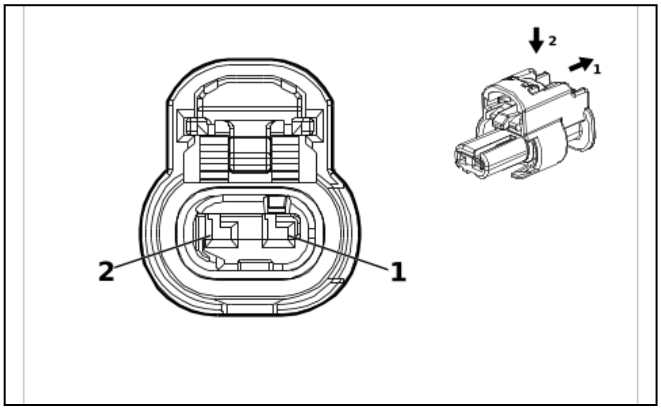
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B58L Airbag Front End Discriminating Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / YE | (1) 354 | (1) Left Front Impact Discriminating Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 5045 | (2) Left Front Impact Discriminating Sensor Low Reference | (2) I | (2) — |

### B58R Airbag Front End Discriminating Sensor - Right



4649903

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

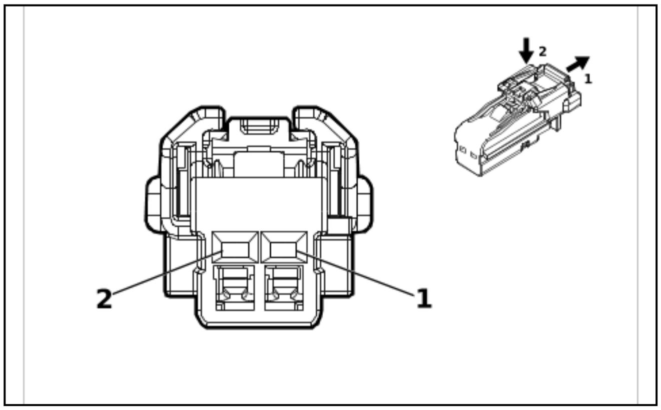
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B58R Airbag Front End Discriminating Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 1409 | (1) Right Front Impact Discriminating Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 5600 | (2) Right Front Impact Discriminating Sensor Low Reference | (2) I | (2) — |

### B61P Seat Belt Tension Sensor - Passenger



4115691

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

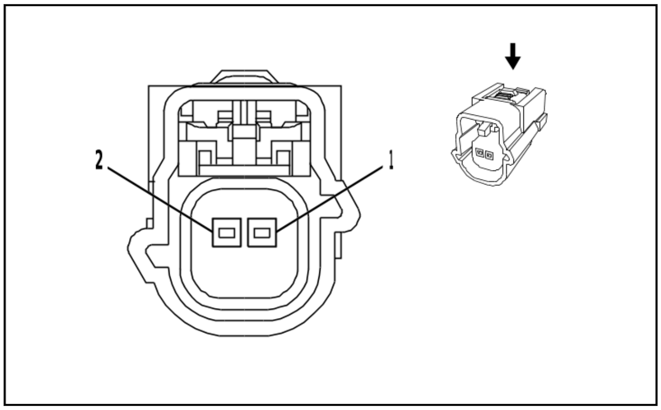
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B61P Seat Belt Tension Sensor - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / OG | (1) 3946 | (1) Passenger Automatic Locking Retractor Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / BN | (2) 3947 | (2) Passenger Automatic Locking Retractor Switch Signal | (2) I | (2) — |

### B63LF Airbag Side Impact Sensor - Left Front Door



2179777

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 13610095
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed( GY)

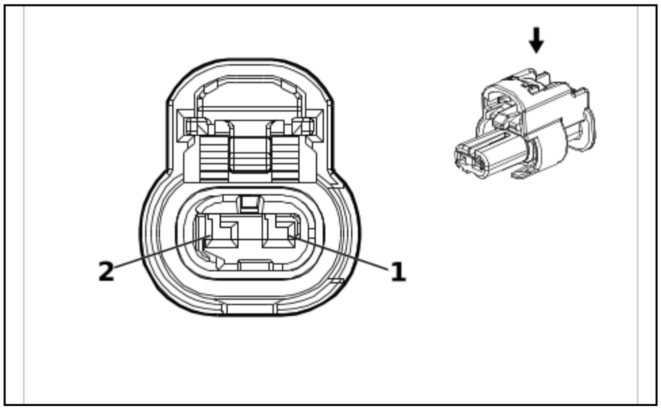
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B63LF Airbag Side Impact Sensor - Left Front Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 2132 | (1) Left Front Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6628 | (2) Left Front Side Impact Sensor Low Reference | (2) I | (2) — |

### B63LR Airbag Side Impact Rear Sensor - Left Door



4335931

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

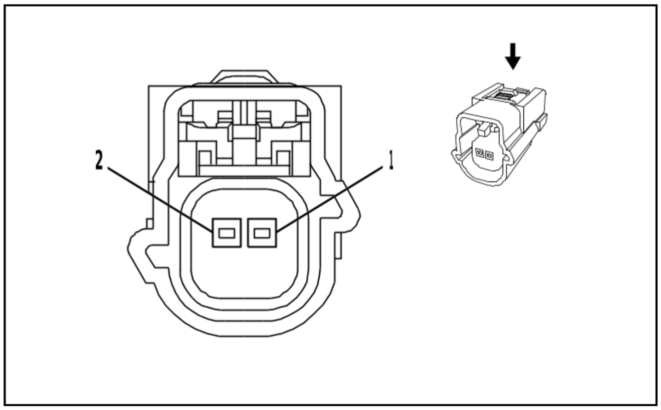
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B63LR Airbag Side Impact Rear Sensor - Left Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BU | (1) 6622 | (1) Left Rear Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6623 | (2) Left Rear Side Impact Sensor Low Reference | (2) I | (2) — |

### B63RF Airbag Side Impact Sensor - Right Front Door



2179777

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 13610095
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Series, Sealed( GY)

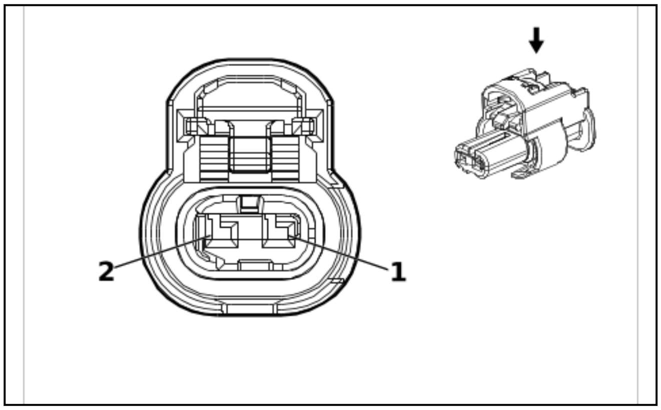
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B63RF Airbag Side Impact Sensor - Right Front Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / OG | (1) 2134 | (1) Right Front Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6629 | (2) Right Front Side Impact Sensor Low Reference | (2) I | (2) — |

### B63RR Airbag Side Impact Rear Sensor - Right Door



4335931

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

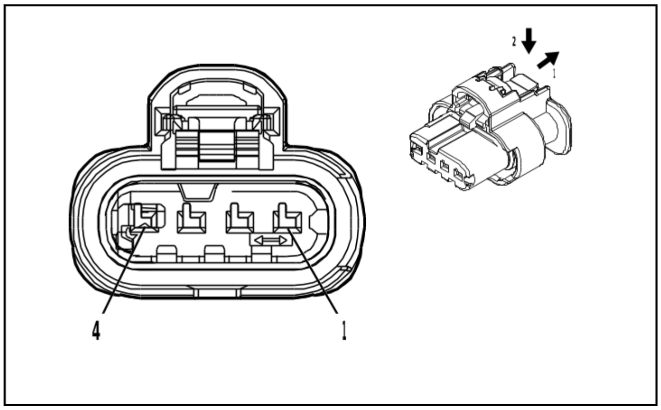
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B63RR Airbag Side Impact Rear Sensor - Right Door

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / WH | (1) 6626 | (1) Right Rear Side Impact Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 6627 | (2) Right Rear Side Impact Sensor Low Reference | (2) I | (2) — |

### B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0)



4934614

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

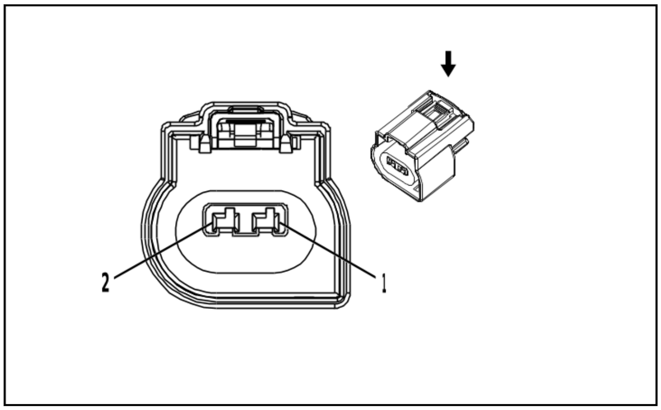
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 7329 | (1) Pre-Throttle Air Temperature Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / RD | (2) 480 | (2) Engine Control Vehicle Sensors 5 Volt Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 580 | (3) Engine Control Sensors Low Reference 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GN / WH | (4) 432 | (4) Manifold Absolute Pressure Sensor Signal | (4) I | (4) — |

### B68A Knock Sensor 1



2717073

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 34752-0204
- Service Connector: 19301207
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

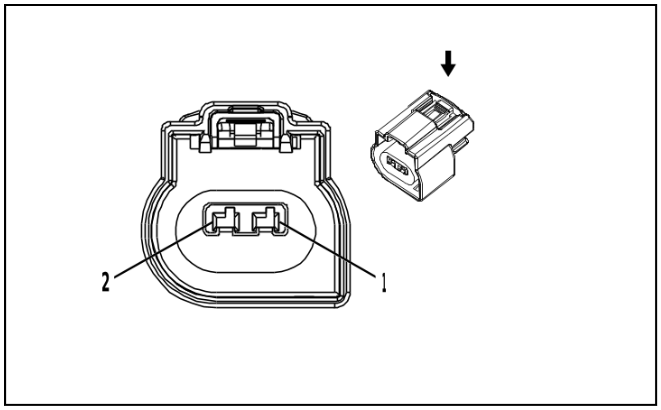
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B68A Knock Sensor 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK / YE | (1) 1716 | (1) Knock Sensor Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT / GY | (2) 496 | (2) Knock Sensor 1 Signal | (2) I | (2) — |

### B68B Knock Sensor 2



2717073

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 34752-0204
- Service Connector: 19301207
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

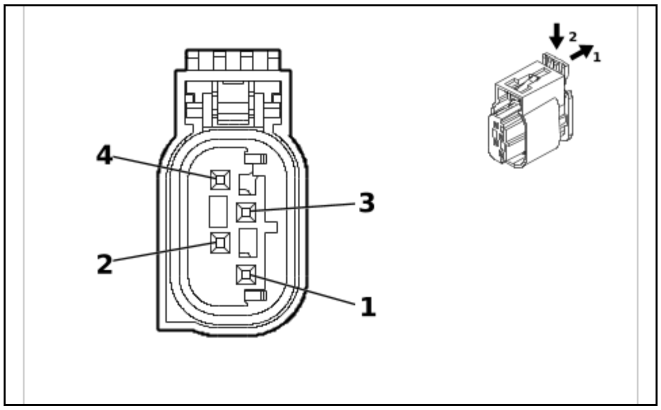
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B68B Knock Sensor 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / GY | (1) 1876 | (1) Knock Sensor 2 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / GY | (2) 2303 | (2) Knock Sensor Low Reference 2 | (2) I | (2) — |

### B70 Liftgate Close Switch (TB5 / TCP)



5215490

**Connector Part Information**
- Harness Type: Liftgate Wiring Harness
- OEM Connector: 13655424
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 MTS Series, Sealed( BK)

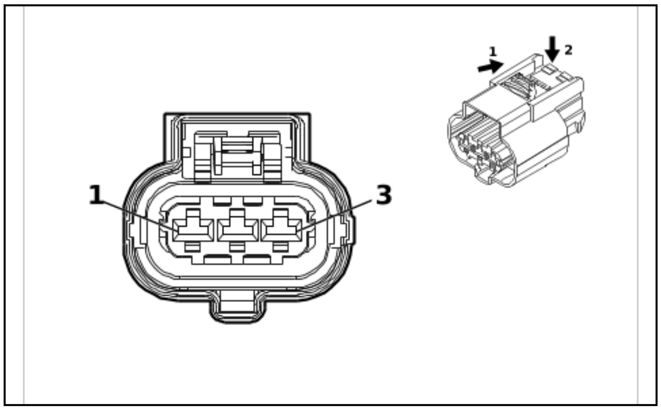
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B70 Liftgate Close Switch (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / VT | (1) 4656 | (1) Rear Closure Object Sensor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / WH | (2) 4658 | (2) Rear Closure Switch LED Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN | (3) 4657 | (3) Rear Closure Switch Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### B74 Manifold Absolute Pressure Sensor



4900977

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35133579
- Service Connector: 84815530
- Description: 3-Way F 2.8 CTS Series, Sealed( BK)

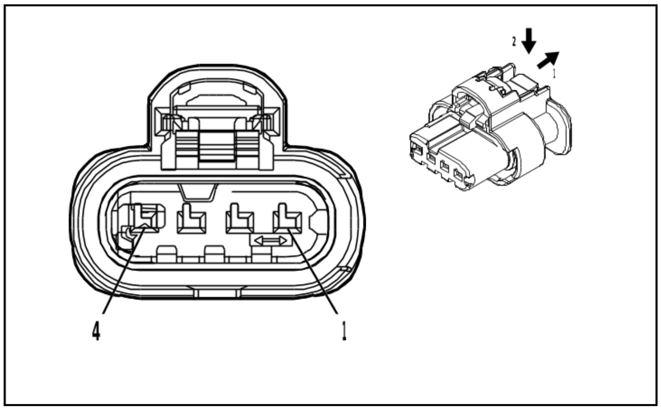
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## B74 Manifold Absolute Pressure Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / RD | (1) 2704 | (1) Manifold Absolute Pressure Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 469 | (2) Manifold Absolute Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 432 | (3) Manifold Absolute Pressure Sensor Signal | (3) I | (3) — |

### B75 Mass Airflow Sensor



4934614

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

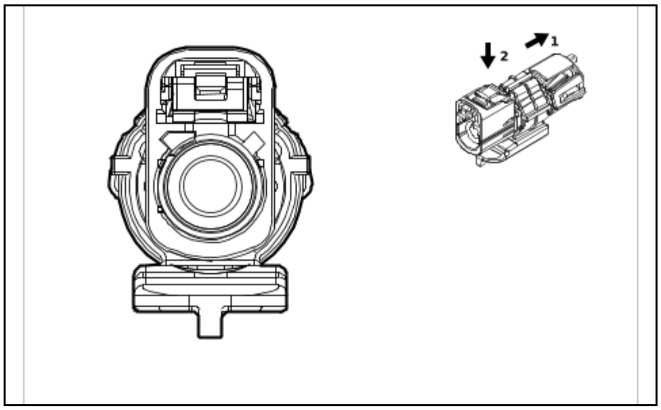
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B75 Mass Airflow Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 0.5 | (1) VT / BU<br>(1) VT / BU | (1) 5294<br>(1) 5294 | (1) Powertrain Main Relay Fused Supply Voltage 5<br>(1) Powertrain Main Relay Fused Supply Voltage 5 | (1) I<br>(1) I | (1) L84/ L87<br>(1) LZ0 |
| (2) 2 | (2) 0.5 | (2) GN / WH | (2) 492 | (2) Mass Air Flow Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / WH | (3) 4622 | (3) Engine Control Module LIN Bus 2 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) BK / WH | (4) 6151 | (4) Engine Control Module Ground | (4) I | (4) — |

### B87 Rearview Driver Information Camera



5519150

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness COAX
- OEM Connector: 35187047
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed( BK)

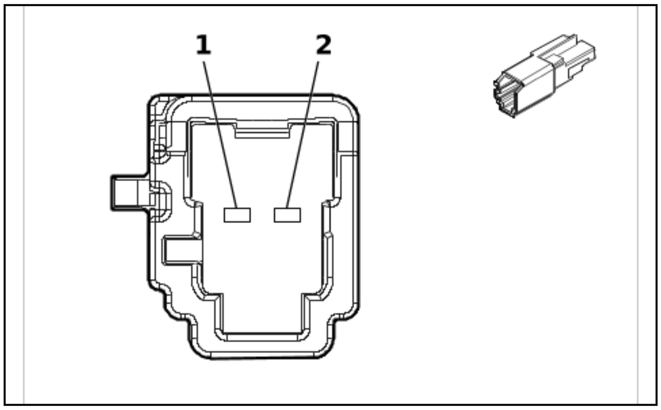
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B87 Rearview Driver Information Camera

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Rear Vision Camera Coaxial Video Signal | I | — |

### B88CL Seat Belt Switch - 3rd Row Left



6529127

**Connector Part Information**
- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 6099-0611
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MBS Series( GY)

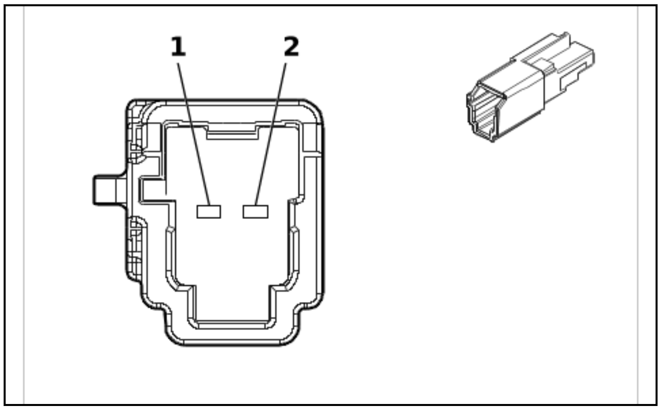
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## B88CL Seat Belt Switch - 3rd Row Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / OG | (2) 3516 | (2) 3rd Row Left Seat Belt Switch Signal | (2) I | (2) — |

### B88CM Seat Belt Switch - 3rd Row Middle



6529124

**Connector Part Information**
- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MBS Series( BK)

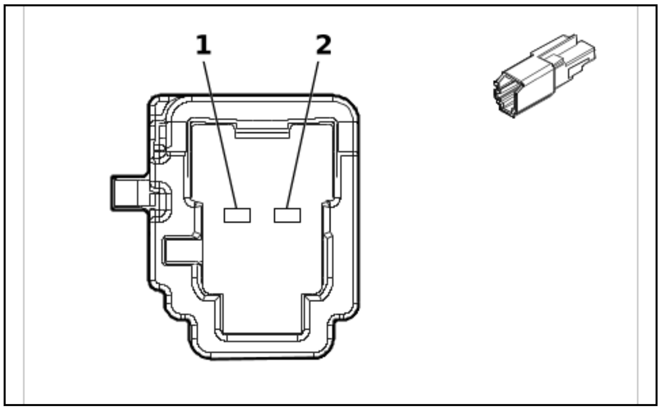
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## B88CM Seat Belt Switch - 3rd Row Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / GN | (2) 3700 | (2) 3rd Row Center Seat Belt Switch Signal | (2) I | (2) — |

## B88CR Seat Belt Switch - 3rd Row Right



6529127

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 6099-0611
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MBS Series( GY)

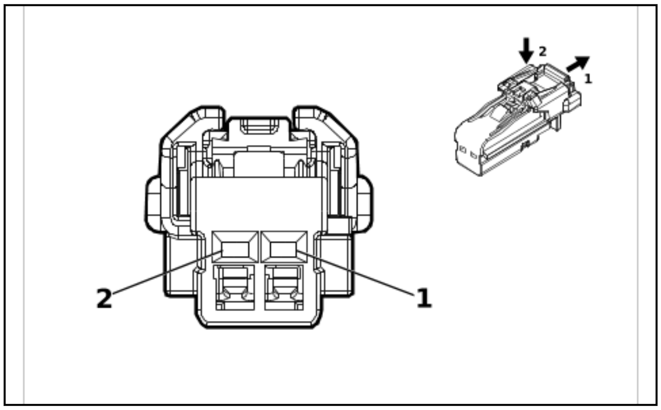
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

### B88CR Seat Belt Switch - 3rd Row Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 3517 | (2) 3rd Row Right Seat Belt Switch Signal | (2) I | (2) — |

## B88DB Seat Belt Sensor - Driver



4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

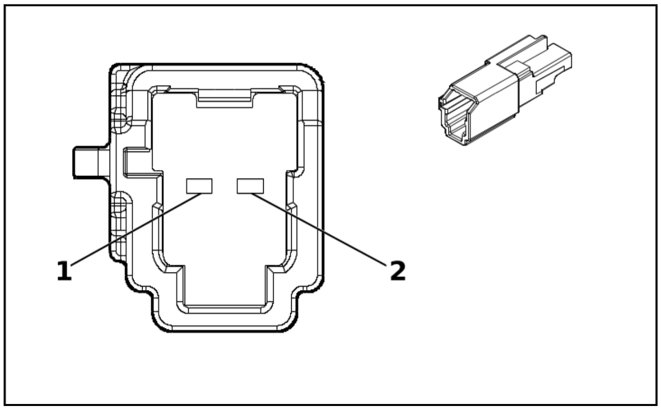
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B88DB Seat Belt Sensor - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / GY | (2) 2652 | (2) Driver Seat Belt Sensor Signal | (2) I | (2) — |

### B88LR Seat Belt Switch - Left Rear (UH5)



5355341

**Connector Part Information**
- Harness Type: 2nd Row Seat Wiring Harness - Left Cushion
- OEM Connector: Seat Belt Switch - Left Rear
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

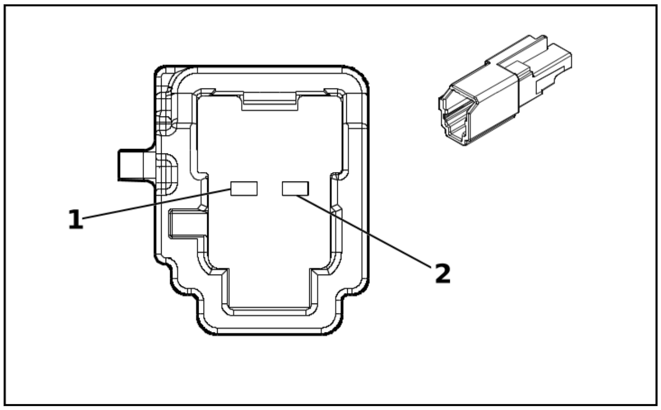
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B88LR Seat Belt Switch - Left Rear (UH5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) — | (2) YE / OG | (2) 5161 | (2) Left Rear Seat Belt Switch Signal | (2) I | (2) — |

### B88MR Seat Belt Switch - Rear Middle (AT6 / ATT)



5360948

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Left Cushion
- OEM Connector: 13530129
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( GY)

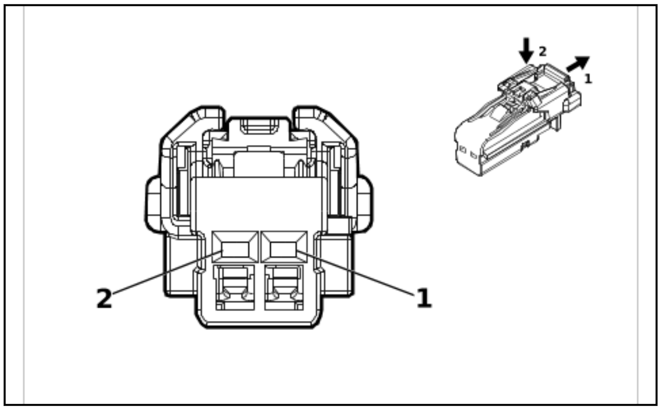
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B88MR Seat Belt Switch - Rear Middle (AT6 / ATT)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU / OG | (2) 5163 | (2) Rear Center Seat Belt Switch Signal | (2) I | (2) — |

### B88P Seat Belt Switch - Passenger



4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

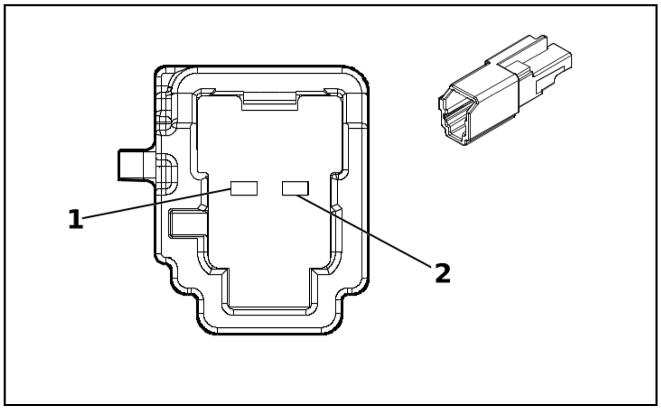
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B88P Seat Belt Switch - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / VT | (2) 1362 | (2) Passenger Seat Belt Switch Signal | (2) I | (2) — |

### B88RR Seat Belt Switch - Right Rear (UH5)



5360948

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Right Cushion
- OEM Connector: 13530129
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series( GY)

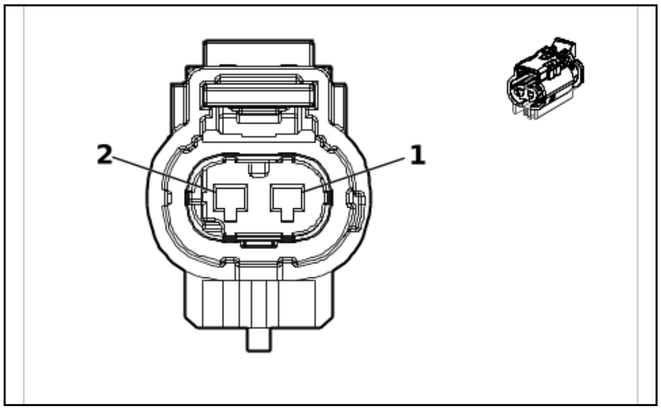
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B88RR Seat Belt Switch - Right Rear (UH5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK / OG | (1) 1363 | (1) Driver Seat Belt Switch Low Reference | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / OG | (2) 5162 | (2) Right Rear Seat Belt Switch Signal | (2) I | (2) — |

### B96 Cylinder Head Temperature Sensor (LZ0)



6776342

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10530493
- Service Connector: 86308597
- Description: 2-Way F 1.2 MLK Series, Sealed( GY)

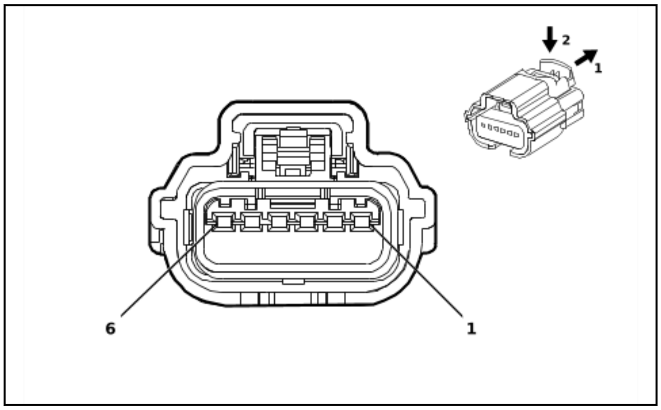
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B96 Cylinder Head Temperature Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 37 | (1) Engine Block Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 580 | (2) Engine Control Sensors Low Reference 2 | (2) I | (2) — |

### B107 Accelerator Pedal Position Sensor



5157678

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 31404-7110
- Service Connector: 84773558
- Description: 6-Way F 64 Series, Sealed( BK)

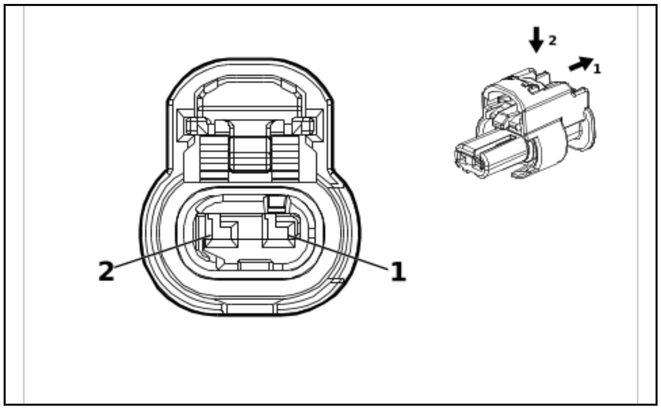
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B107 Accelerator Pedal Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / RD | (1) 1164 | (1) Accelerator Pedal Position 5V Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 1161 | (2) Accelerator Pedal Position Signal 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 1271 | (3) Accelerator Pedal Position Low Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / VT | (4) 1272 | (4) Accelerator Pedal Position Low Reference 2 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GN / WH | (5) 1162 | (5) Accelerator Pedal Position Signal 2 | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / RD | (6) 1274 | (6) Accelerator Pedal Position 5V Reference 2 | (6) I | (6) — |

### B110 Battery Monitor Module X1



4649903

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

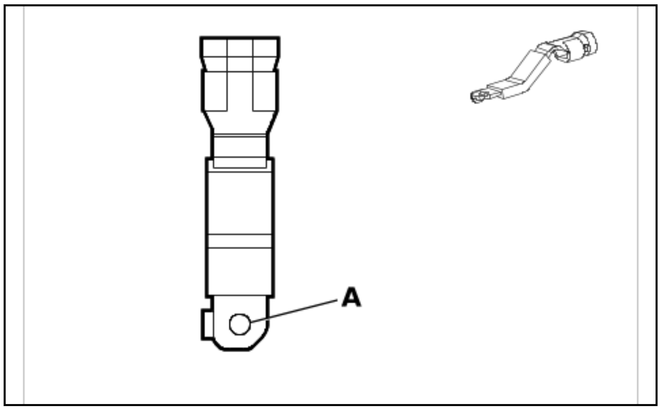
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B110 Battery Monitor Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / YE | (1) 2855 | (1) Body Control Module LIN Bus 9 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / YE | (2) 2340 | (2) Battery Positive Voltage | (2) I | (2) — |

### B110 Battery Monitor Module X2



6458129

**Connector Part Information**
- Harness Type: Starter Solenoid Cable
- OEM Connector: 84892627
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

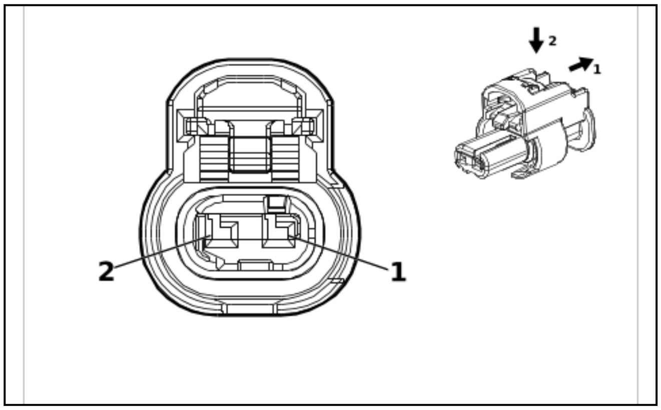
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B110 Battery Monitor Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | BK | 450 | Ground | I | — |
|  | 35 | BK | 850 | Ground |  | — |

### B110AX Battery Monitor Module - Auxiliary X1 (5W4 / 9C1)



4649903

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

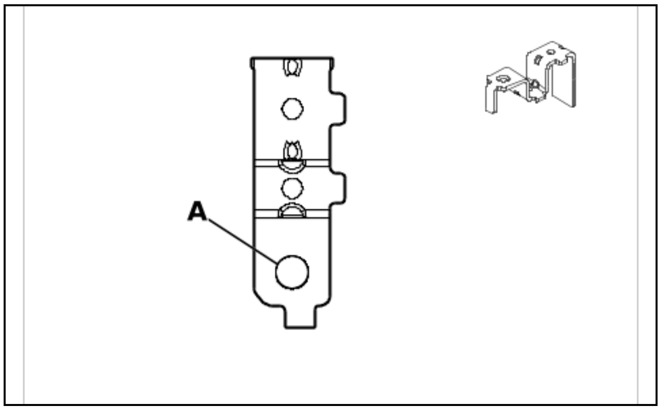
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B110AX Battery Monitor Module - Auxiliary X1 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / VT | (1) 2860 | (1) Body Control Module LIN Bus 14 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / YE | (2) 2340 | (2) Battery Positive Voltage | (2) I | (2) — |

**B110AX Battery Monitor Module - Auxiliary X2 (5W4 / 9C1)**



6952639

**Connector Part Information**
- Harness Type: Auxiliary Battery Negative Cable
- OEM Connector: 85580043
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

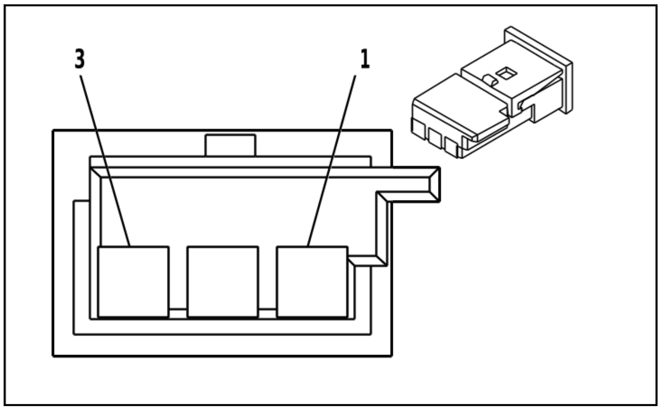
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B110AX Battery Monitor Module - Auxiliary X2 (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | BK | 2550 | Ground | I | — |

## B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor



647970

**Connector Part Information**

- Harness Type: Windshield Outside Moisture-Ambient Light and Humidity Sensor
- OEM Connector: 1-1718346-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Micro-Quadlock Series( BK)

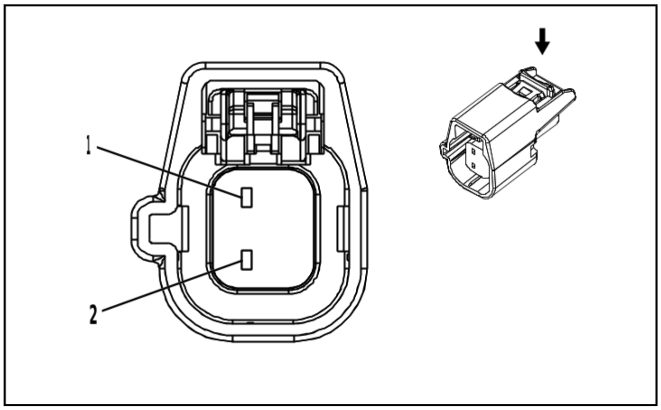
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BN | (2) 4115 | (2) Body Control Module LIN Bus 5 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 850 | (3) Ground | (3) I | (3) — |

### B118 Windshield Washer Solvent Container Level Sensor



3958652

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7287-8378-40
- Service Connector: 13593220
- Description: 2-Way F 1.5 Series, Sealed( L-GY)

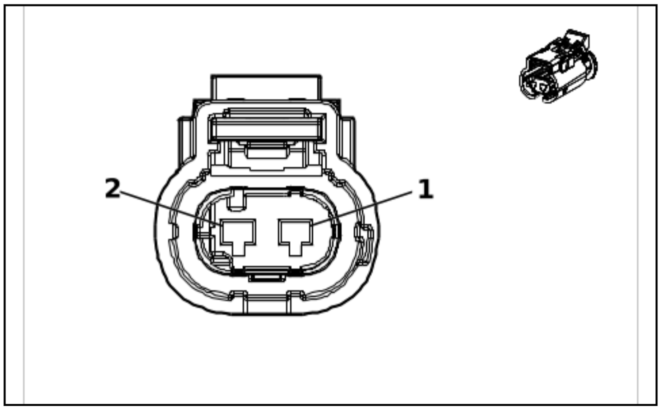
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B118 Windshield Washer Solvent Container Level Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT | (1) 185 | (1) Low Washer Fluid Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 150 | (2) Ground | (2) I | (2) — |

### B130C Exhaust Gas Recirculation Temperature Sensor 3 (LZ0)



6860491

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10530499
- Service Connector: 86308599
- Description: 2-Way F 1.2 MLK Series, Sealed( GY)

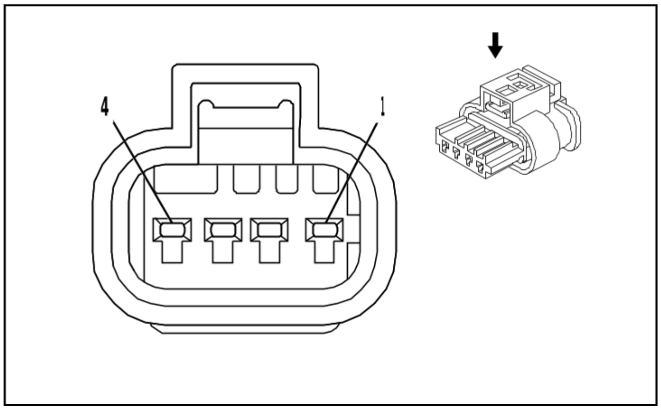
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B130C Exhaust Gas Recirculation Temperature Sensor 3 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / GN | (1) 3235 | (1) Exhaust Gas Recirculation Temperature Sensor 3 Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 3234 | (2) Exhaust Gas Recirculation Temperature Sensor 3 Signal | (2) I | (2) — |

### B136 Exhaust Particulate Matter Sensor (LZ0)



2487928

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 805-122-541
- Service Connector: 13581092
- Description: 4-Way F 1.2 Series, Sealed( BK)

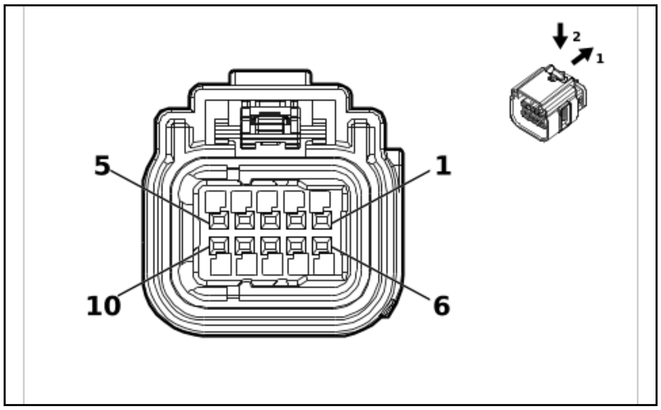
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B136 Exhaust Particulate Matter Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK / WH | (1) 6151 | (1) Engine Control Module Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GY | (2) 4054 | (2) Private Serial Data Powertrain CAN Bus [-] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4055 | (3) Private Serial Data Powertrain CAN Bus [+] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / GN | (4) 4320 | (4) Powertrain Sensor Bus Enable | (4) I | (4) — |

## B137B Power Steering Shaft Torque/Position Sensor



2748051

**Connector Part Information**

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: 13585922
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 Series, Sealed( BK)

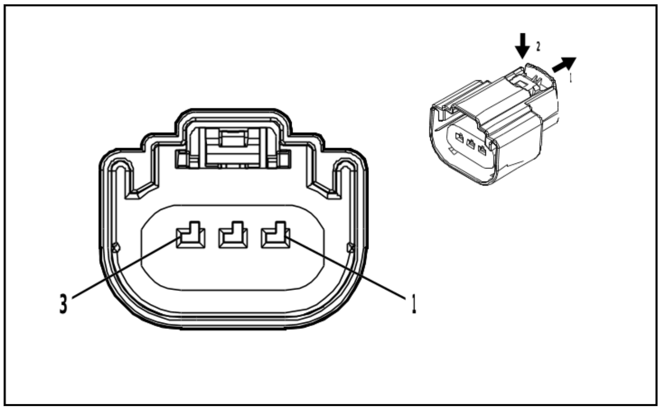
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B137B Power Steering Shaft Torque/Position Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / RD | (1) 8367 | (1) Handwheel Channel A Torque Pressure Sensor 1 SENT Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / BU | (2) 8366 | (2) Handwheel Channel A High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 8370 | (3) Handwheel Channel A Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) VT | (4) 8371 | (4) Handwheel Channel B High Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) RD | (5) 8372 | (5) Handwheel Channel B Torque Pressure Sensor 1 SENT Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN | (6) 8368 | (6) Handwheel Channel A Torque Pressure Sensor 2 SENT Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) YE | (7) 8369 | (7) Handwheel Channel A Angle Position Sensor SENT Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BK | (8) 8375 | (8) Handwheel Channel B Low Reference | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) OG | (9) 8374 | (9) Handwheel Channel B Angle Position Sensor SENT Signal | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BU | (10) 8373 | (10) Handwheel Channel B Torque Pressure Sensor 2 SENT Signal | (10) I | (10) — |

## B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)



4569745

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 160073-3105
- Service Connector: 19179750
- Description: 3-Way F 1.5 MX Series, Sealed( BK)

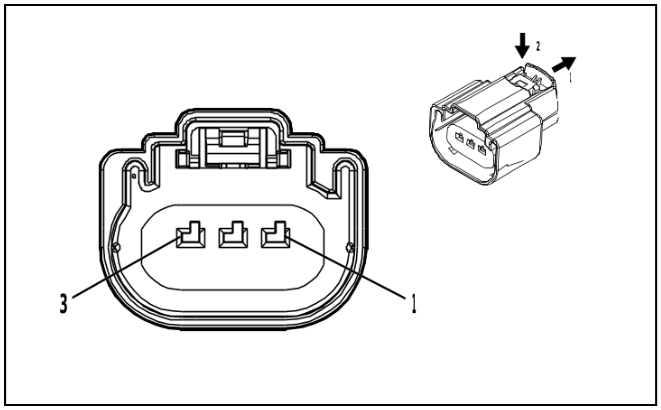
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / RD | (1) 7477 | (1) Gear Position Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GN | (2) 7479 | (2) Rotary Position Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BK | (3) 7478 | (3) Gear Position Sensor Low Reference | (3) I | (3) — |

## B150 Fuel Tank Pressure Sensor (L84 / L87)



4589538

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 160073-3106
- Service Connector: 84569854
- Description: 3-Way F 1.5 MX Series, Sealed( GY)

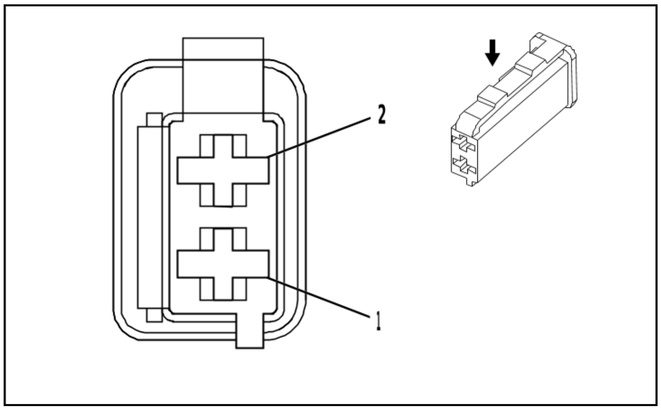
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### B150 Fuel Tank Pressure Sensor (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 890 | (1) Fuel Tank Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BN | (2) 6284 | (2) Fuel Tank Pressure Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / RD | (3) 2709 | (3) Fuel Tank Pressure Sensor 5V Reference | (3) I | (3) — |

### B159BL Body Side Rear Window Glass Breakage Sensor - Left



2339593

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1563189-1
- Service Connector: 13580951
- Description: 2-Way F 1.6 Timer Series( BK)

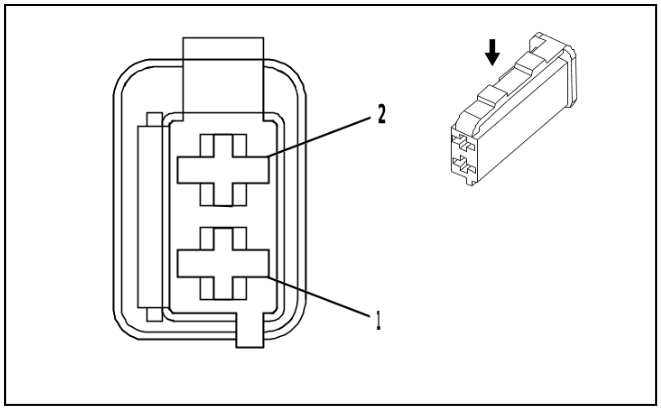
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B159BL Body Side Rear Window Glass Breakage Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / VT | (1) 7597 | (1) Glass Breakage Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / BU | (2) 7598 | (2) Glass Breakage Sensor 2 Signal | (2) I | (2) — |

### B159BR Body Side Rear Window Glass Breakage Sensor - Right



2339593

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 1563189-1
- Service Connector: 13580951
- Description: 2-Way F 1.6 Timer Series( BK)

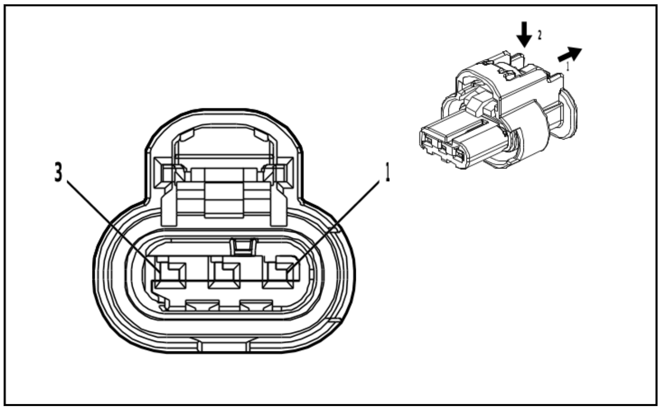
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## B159BR Body Side Rear Window Glass Breakage Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BK | (1) 2930 | (1) Glass Breakage Sensor Supply Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / VT | (2) 7597 | (2) Glass Breakage Sensor Signal | (2) I | (2) — |

### B161LF Electronic Suspension Wheel Front Vertical Accelerometer - Left (Z95)



4778903

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

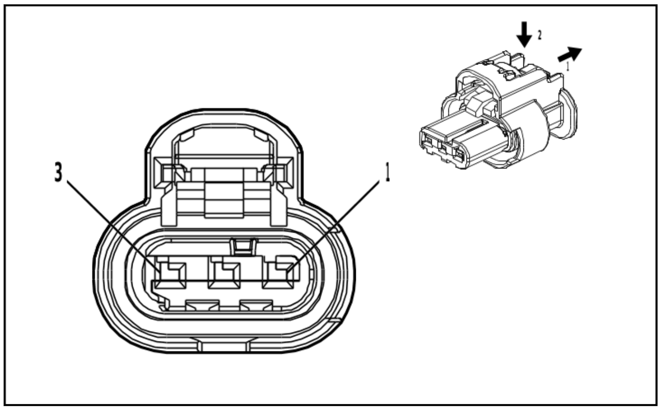
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B161LF Electronic Suspension Wheel Front Vertical Accelerometer - Left (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / RD | (1) 1817 | (1) Left Front Vertical Suspension Acceleration Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BN | (2) 1099 | (2) Left Front Vertical Suspension Acceleration Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 1100 | (3) Left Front Vertical Suspension Acceleration Sensor Signal | (3) I | (3) — |

## B161RF Electronic Suspension Wheel Front Vertical Accelerometer - Right (Z95)



4778903

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

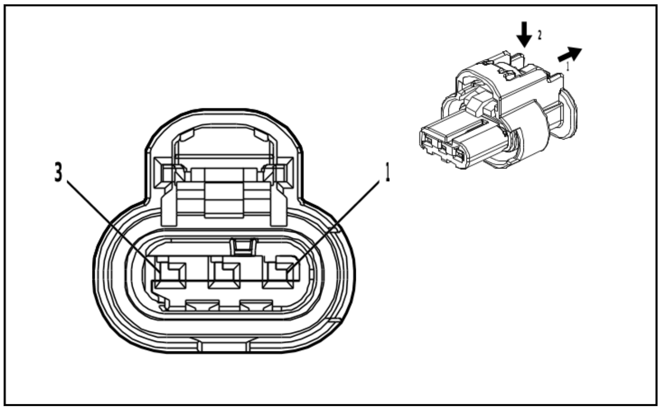
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B161RF Electronic Suspension Wheel Front Vertical Accelerometer - Right (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / RD | (1) 1819 | (1) Right Front Vertical Suspension Acceleration Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 1105 | (2) Right Front Vertical Suspension Acceleration Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 1106 | (3) Right Front Vertical Suspension Acceleration Sensor Signal | (3) I | (3) — |

## B162LR Electronic Suspension Rear Vertical Accelerometer - Left (Z95)



4778903

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

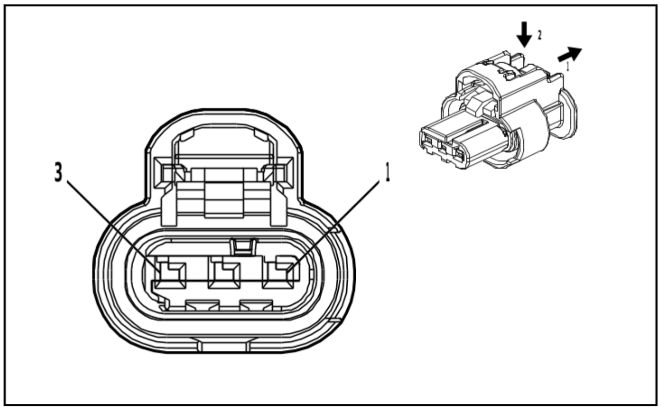
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B162LR Electronic Suspension Rear Vertical Accelerometer - Left (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / RD | (1) 1818 | (1) Left Rear Vertical Suspension Acceleration Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / VT | (2) 1833 | (2) Left Rear Vertical Suspension Acceleration Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BN | (3) 1103 | (3) Left Rear Vertical Suspension Acceleration Sensor Signal | (3) I | (3) — |

### B162RR Electronic Suspension Rear Vertical Accelerometer - Right (Z95)



4778903

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

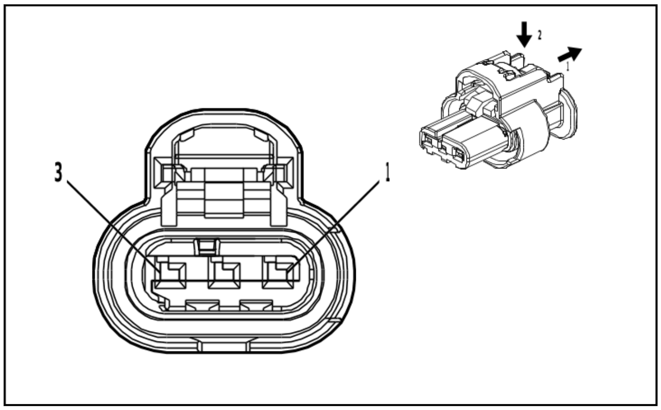
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B162RR Electronic Suspension Rear Vertical Accelerometer - Right (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / RD | (1) 1820 | (1) Right Rear Vertical Suspension Acceleration Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 1108 | (2) Right Rear Vertical Suspension Acceleration Sensor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BU | (3) 1109 | (3) Right Rear Vertical Suspension Acceleration Sensor Signal | (3) I | (3) — |

### B166LFB Advanced Parking Assist Alarm Side Sensor - Left Front (UKZ)



4994602

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

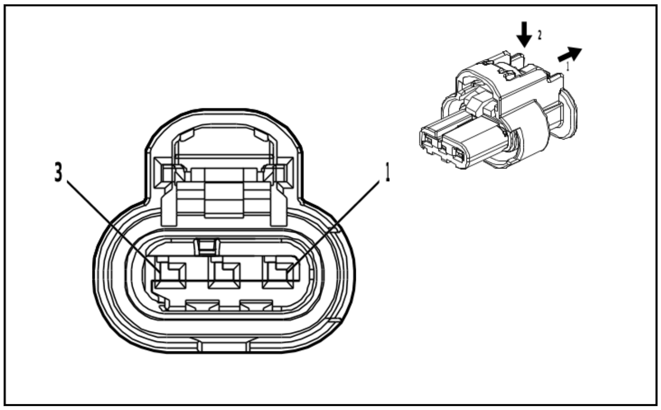
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B166LFB Advanced Parking Assist Alarm Side Sensor - Left Front (UKZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 3154 | (2) Left Front Advanced Parking Assist Side Object Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

## B166LRB Advanced Parking Assist Alarm Rear Side Sensor - Left



4994602

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

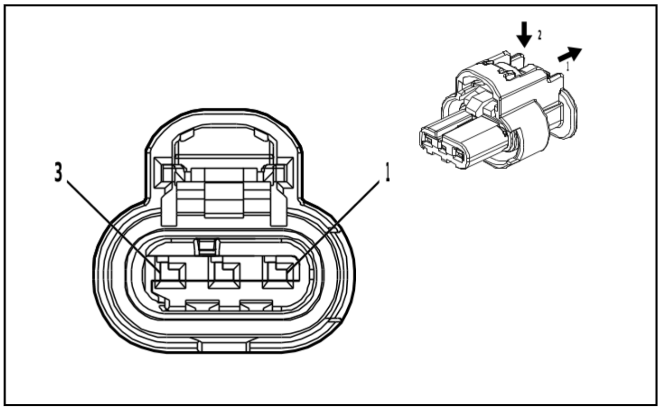
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B166LRB Advanced Parking Assist Alarm Rear Side Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 3156 | (2) Left Rear Advanced Parking Assist Side Object Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

## B166RFB Advanced Parking Assist Alarm Side Sensor - Right Front



4994602

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

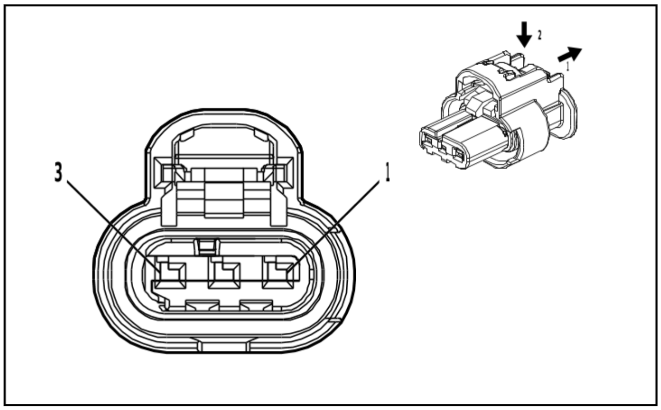
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B166RFB Advanced Parking Assist Alarm Side Sensor - Right Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 3155 | (2) Right Front Advanced Parking Assist Side Object Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

### B166RRB Advanced Parking Assist Alarm Rear Side Sensor - Right



4994602

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

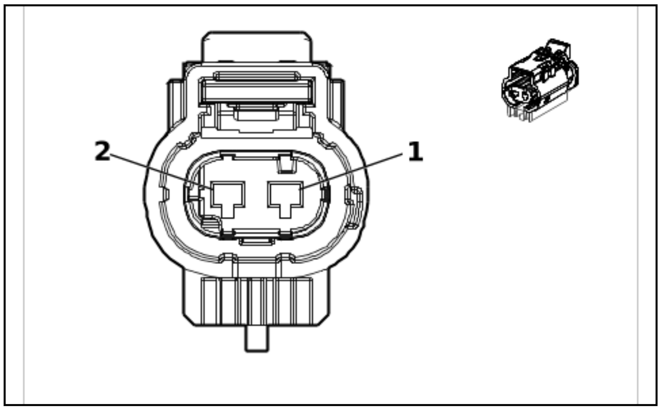
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B166RRB Advanced Parking Assist Alarm Rear Side Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 3157 | (2) Right Rear Advanced Parking Assist Side Object Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B172LF Front Disc Brake Pad Wear Sensor - Left (JBK)



6819415

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 10530492
- Service Connector: 86308596
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

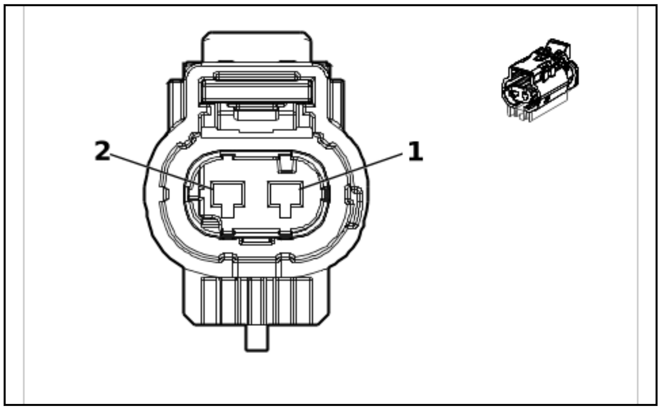
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B172LF Front Disc Brake Pad Wear Sensor - Left (JBK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 1602 | (1) Front Brake Pad Wear Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |

### B172LR Rear Disc Brake Pad Wear Sensor - Left (JKB)



6819415

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness - Left
- OEM Connector: 10530492
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

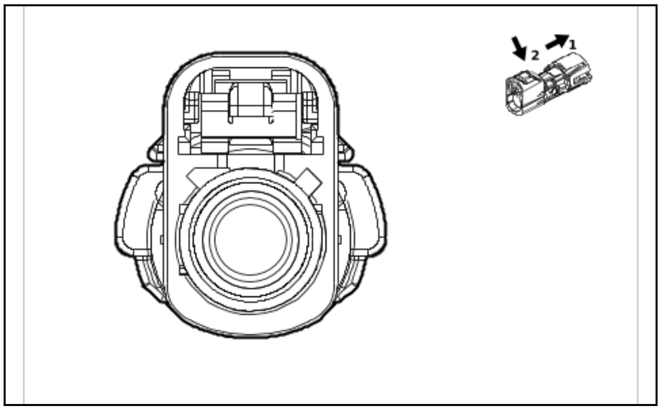
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B172LR Rear Disc Brake Pad Wear Sensor - Left (JKB)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / YE | (1) 1616 | (1) Rear Brake Pad Wear Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |

### B174G Front View Driver Information Camera - Grille



5758030

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

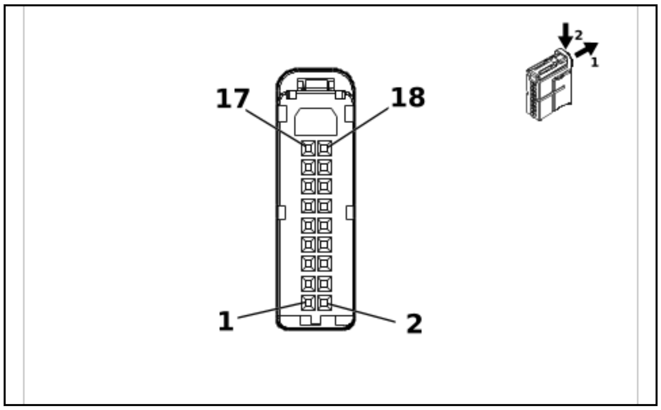
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B174G Front View Driver Information Camera - Grille

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Front Vision Camera 1 Coaxial Video Signal | I | — |

## B174W Front View Camera - Windshield (- (UK0 / UKL))



6177962

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 2312118-1
- Service Connector: 13543041
- Description: 18-Way F 0.5 GEN 50 Series( BK)

## Terminal Part Information

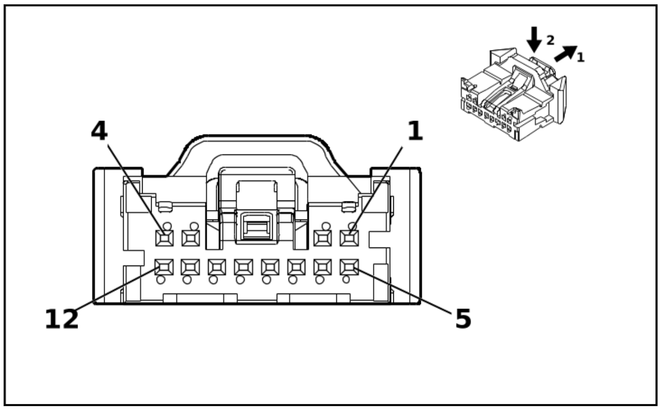
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## B174W Front View Camera - Windshield (- (UK0 / UKL))

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / WH | (1) 7209 | (1) Ethernet Bus 3 [+] | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BN | (3) 7208 | (3) Ethernet Bus 3 [-] | (3) II | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BU / YE | (7) 4979 | (7) AUTOSAR CAN Bus [+] 2 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4979 | (8) AUTOSAR CAN Bus [+] 2 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4978 | (9) AUTOSAR CAN Bus [-] 2 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) WH | (10) 4978 | (10) AUTOSAR CAN Bus [-] 2 Serial Data | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BK / WH | (11) 1851 | (11) Signal Ground | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) BU / GY | (13) 4105 | (13) AUTOSAR CAN Bus [+] 8 Serial Data | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) WH / GY | (15) 4104 | (15) AUTOSAR CAN Bus [-] 8 Serial Data | (15) I | (15) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 16 - 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) RD / YE | (18) 240 | (18) Battery Positive Voltage | (18) I | (18) — |

**B174W Front View Camera - Windshield (UK0 / UKL)**



5360826

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series( BK)

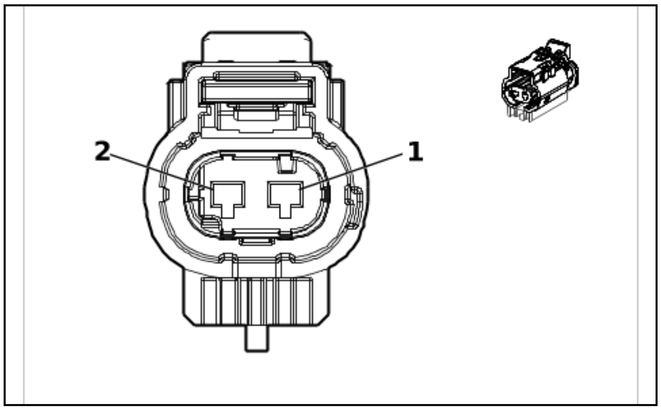
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84944580 | EL-35616-58 (BK) | EL-38125-58 |

## B174W Front View Camera - Windshield (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 1851 | (1) Signal Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) RD / YE | (3) 240 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BU / GY | (5) 4105 | (5) AUTOSAR CAN Bus [+] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / GY | (6) 4104 | (6) AUTOSAR CAN Bus [-] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BU / GY | (7) 4105 | (7) AUTOSAR CAN Bus [+] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH / GY | (8) 4104 | (8) AUTOSAR CAN Bus [-] 8 Serial Data | (8) I | (8) — |
| 9 - 12 | — | — | — | Not Occupied | — | — |

### B193A Charge Air Cooler Air Temperature Sensor - Inlet (LZ0)



6819415

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10530492
- Service Connector: 86308596
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

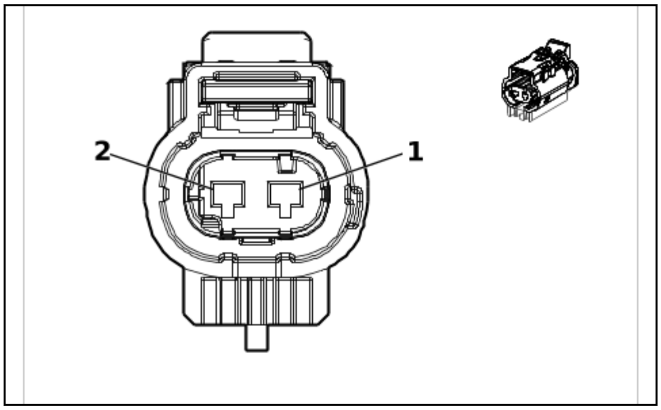
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B193A Charge Air Cooler Air Temperature Sensor - Inlet (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 3683 | (1) Charge Air Cooler Inlet Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BK | (2) 3682 | (2) Charge Air Cooler Inlet Temperature Sensor Low Reference | (2) I | (2) — |

### B193B Charge Air Cooler Air Temperature Sensor - Outlet (LZ0)



6819415

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10530492
- Service Connector: 86308596
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

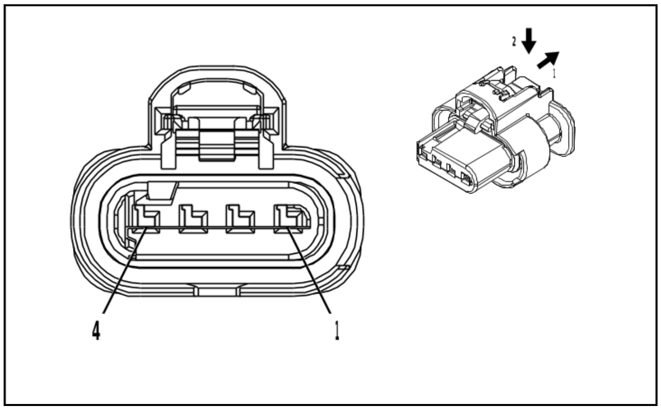
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B193B Charge Air Cooler Air Temperature Sensor - Outlet (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 3681 | (1) Charge Air Cooler Outlet Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BU | (2) 3680 | (2) Charge Air Cooler Outlet Temperature Sensor Low Reference | (2) I | (2) — |

### B195A Nitrogen Oxides Sensor 1 (LZ0)



4210809

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

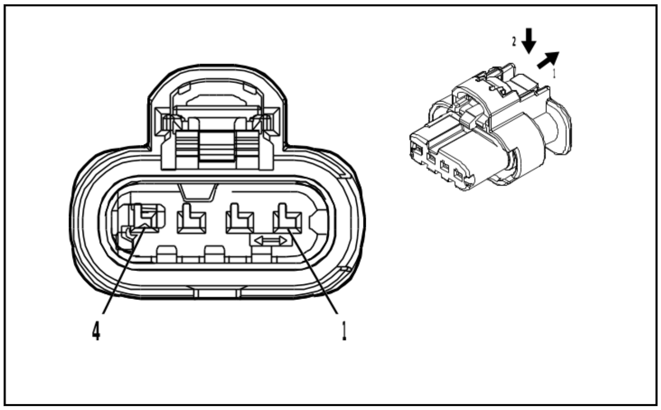
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B195A Nitrogen Oxides Sensor 1 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4055 | (2) Private Serial Data Powertrain CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) BK / WH | (4) 6151 | (4) Engine Control Module Ground | (4) I | (4) — |

## B195B Nitrogen Oxides Sensor 2 (LZ0)



4934614

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-2
- Service Connector: 85519071
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

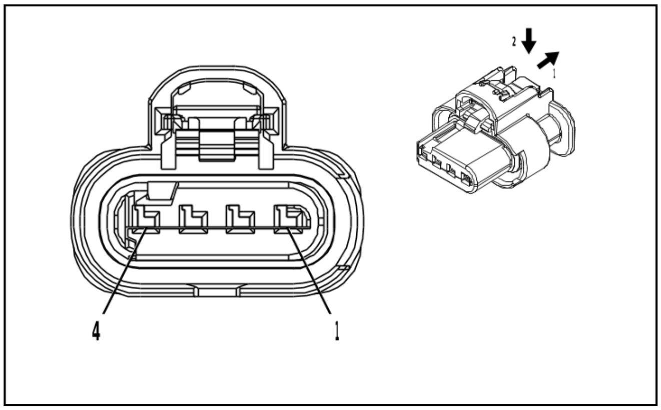
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B195B Nitrogen Oxides Sensor 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4055 | (2) Private Serial Data Powertrain CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) BK / WH | (4) 6151 | (4) Engine Control Module Ground | (4) I | (4) — |

## B195C Nitrogen Oxides Sensor 3 (LZ0)



4210809

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296696-1
- Service Connector: 85518225
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

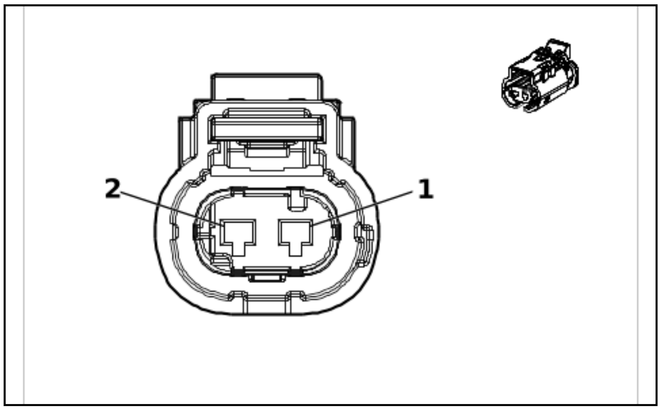
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B195C Nitrogen Oxides Sensor 3 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) VT / GN | (1) 4320 | (1) Powertrain Sensor Bus Enable | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4055 | (2) Private Serial Data Powertrain CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) BK / WH | (4) 6151 | (4) Engine Control Module Ground | (4) I | (4) — |

### B203 Radiator Coolant Temperature Sensor (LZ0)



6776339

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10530497
- Service Connector: 86308598
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

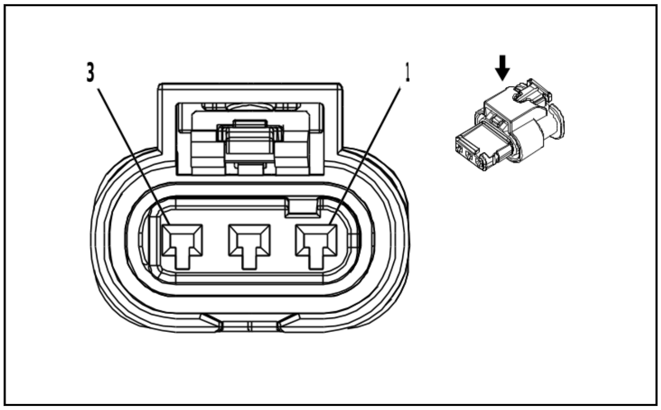
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B203 Radiator Coolant Temperature Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BK | (1) 3000 | (1) Coolant Temperature Sensor 2 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 580 | (2) Engine Control Sensors Low Reference 2 | (2) I | (2) — |

### B212 Reductant Tank Fluid Sensor



2750649

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 1-1718644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON Series, Sealed( BK)

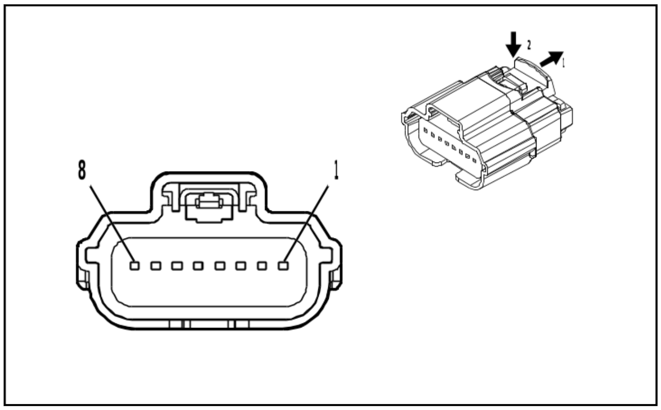
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## B212 Reductant Tank Fluid Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 7290 | (1) Diesel Exhaust Fluid Sensor Voltage Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 7284 | (2) Diesel Exhaust Fluid Liquid Quality Temperature Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 8434 | (3) Diesel Exhaust Fluid Sensor Low Reference | (3) I | (3) — |

**B233B Forward Range Radar Sensor - Long Range**



4708234

**Connector Part Information**

- Harness Type: Forward Range Radar Sensor Wiring Harness
- OEM Connector: 31404-9134
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

## Terminal Part Information

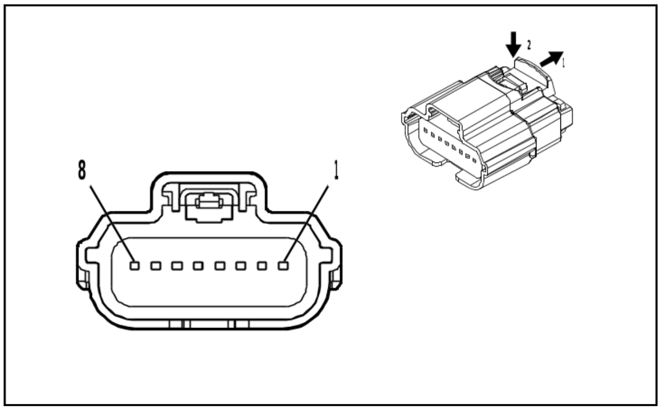
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B233B Forward Range Radar Sensor - Long Range

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BU / GY | (3) 4105 | (3) AUTOSAR CAN Bus [+] 8 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / GY | (4) 4104 | (4) AUTOSAR CAN Bus [-] 8 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) RD / GN | (5) 3140 | (5) Battery Positive Voltage | (5) I | (5) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) BK / WH | (8) 251 | (8) Signal Ground | (8) I | (8) — |

### B233LF Short Range Radar Sensor - Left Front (UKL)



4708234

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9111
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

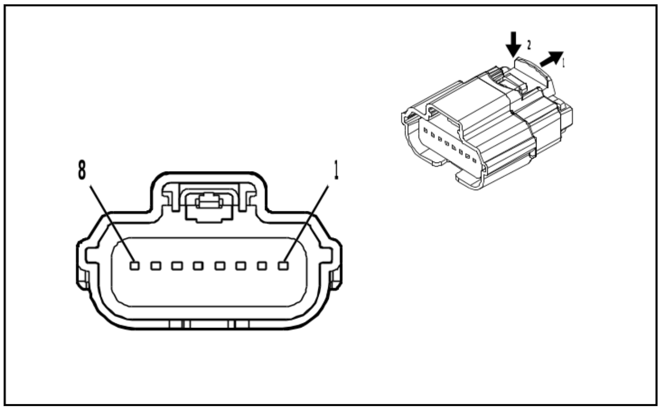
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B233LF Short Range Radar Sensor - Left Front (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 251 | (1) Signal Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / WH | (2) 251 | (2) Signal Ground | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) RD / GN | (4) 3140 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / GY | (5) 4104 | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / GY | (6) 4105 | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / GY | (7) 4104 | (7) AUTOSAR CAN Bus [-] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / GY | (8) 4105 | (8) AUTOSAR CAN Bus [+] 8 Serial Data | (8) I | (8) — |

### B233LR Short Range Radar Rear Sensor - Left (- UKL)



4708234

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9552
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

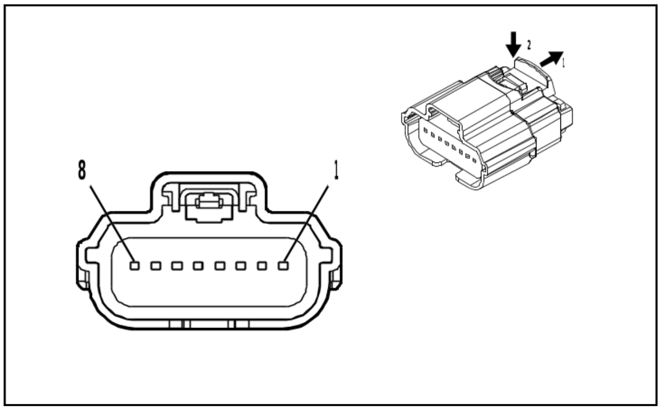
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B233LR Short Range Radar Rear Sensor - Left (- UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1450 | (1) Ground | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) RD / BN | (4) 4940 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GY | (5) 4104 | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GY | (6) 4105 | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / GY | (7) 4104 | (7) AUTOSAR CAN Bus [-] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4105 | (8) AUTOSAR CAN Bus [+] 8 Serial Data | (8) I | (8) — |

## B233RF Short Range Radar Sensor - Right Front (UKL)



4708234

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9171
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

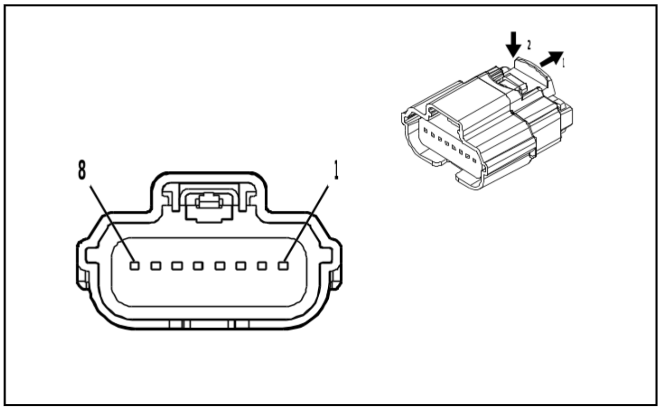
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### B233RF Short Range Radar Sensor - Right Front (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 251 | (1) Signal Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 251 | (3) Signal Ground | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) RD / GN | (4) 3140 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / GY | (5) 4104 | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / GY | (6) 4105 | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / GY | (7) 4104 | (7) AUTOSAR CAN Bus [-] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / GY | (8) 4105 | (8) AUTOSAR CAN Bus [+] 8 Serial Data | (8) I | (8) — |

## B233RR Short Range Radar Rear Sensor - Right (- UKL)



4708234

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

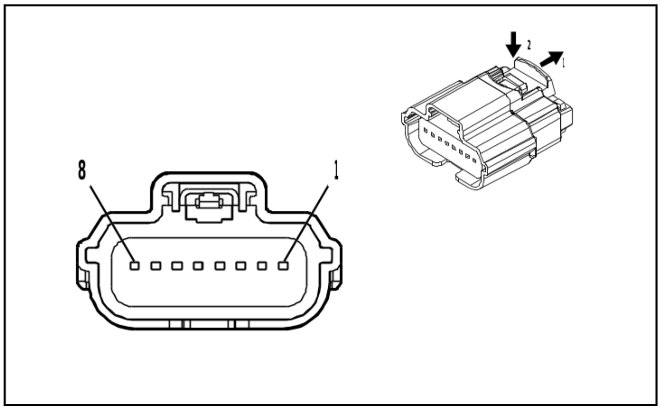
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B233RR Short Range Radar Rear Sensor - Right (- UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1450 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1450 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1450 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) RD / BN | (4) 4940 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GY | (5) 4104 | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GY | (6) 4105 | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / GY | (7) 4104 | (7) AUTOSAR CAN Bus [-] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4105 | (8) AUTOSAR CAN Bus [+] 8 Serial Data | (8) I | (8) — |

### B233SL Short Range Radar Rear Side Sensor - Left (UK0 / UKL)



4708234

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9552
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

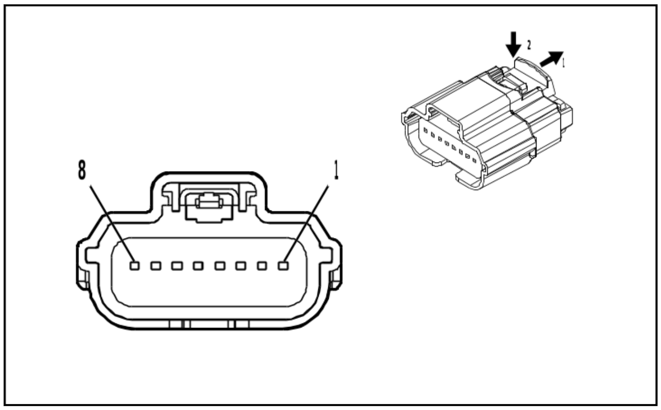
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B233SL Short Range Radar Rear Side Sensor - Left (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1450 | (1) Ground | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) RD / BN | (4) 4940 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GY | (5) 4104 | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GY | (6) 4105 | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / GY | (7) 4104 | (7) AUTOSAR CAN Bus [-] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4105 | (8) AUTOSAR CAN Bus [+] 8 Serial Data | (8) I | (8) — |

### B233SR Short Range Radar Rear Side Sensor - Right (UK0 / UKL)



4708234

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

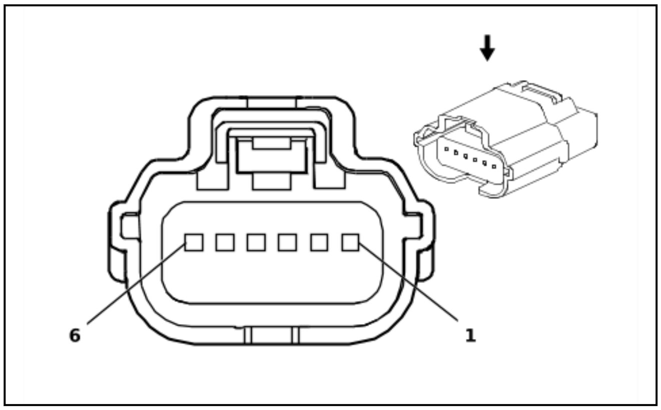
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## B233SR Short Range Radar Rear Side Sensor - Right (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1450 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1450 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1450 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) RD / BN | (4) 4940 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GY | (5) 4104 | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / GY | (6) 4105 | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / GY | (7) 4104 | (7) AUTOSAR CAN Bus [-] 8 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / GY | (8) 4105 | (8) AUTOSAR CAN Bus [+] 8 Serial Data | (8) I | (8) — |

## B284 Vehicle Dynamics Sensor



1974974

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 13541403
- Service Connector: 84773558
- Description: 6-Way F 0.64 Series, Sealed( BK)

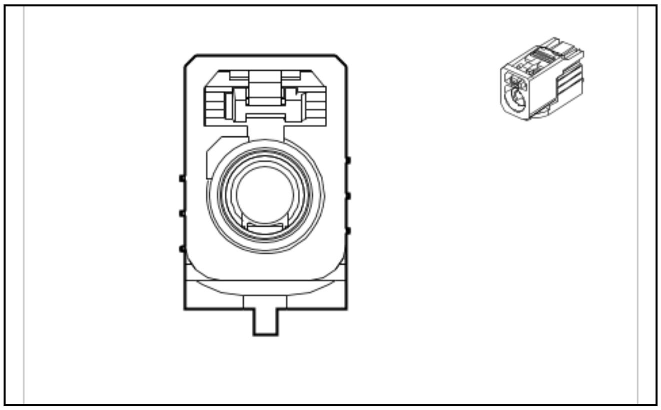
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### B284 Vehicle Dynamics Sensor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / GY | (1) 8978 | (1) Inertial Sensor Supply Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 8977 | (2) Private Serial Data Active Safety CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH | (3) 8976 | (3) Private Serial Data Active Safety CAN Bus [-] Serial Data | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BK / WH | (6) 1351 | (6) Signal Ground | (6) I | (6) — |

### B292 Driver Monitoring Camera (UKL)



5633912

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351016
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( GN)

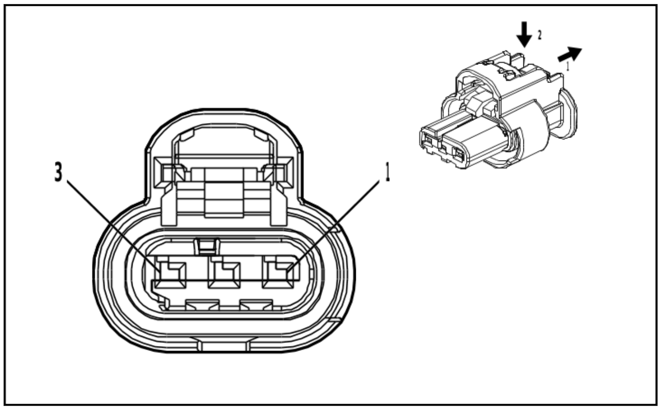
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B292 Driver Monitoring Camera (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Driver Monitoring System Camera Coaxial Signal | I | — |

### B306AB Front Parking Assist Alarm Outer Sensor - Left (UKZ)



4994602

**Connector Part Information**
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

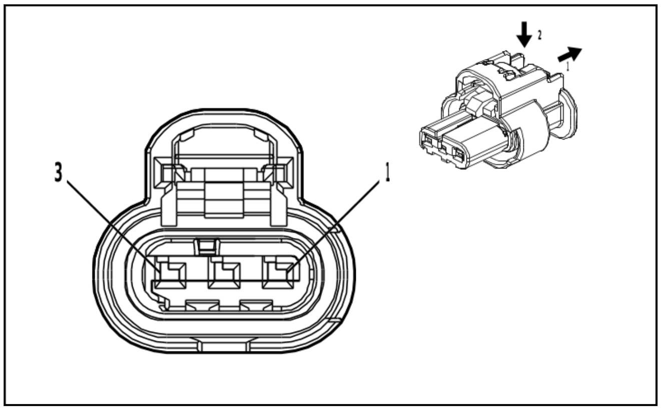
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306AB Front Parking Assist Alarm Outer Sensor - Left (UKZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 5215 | (2) Left Front Outer Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

### B306BB Front Parking Assist Alarm Sensor - Left Middle (UKZ)



4994602

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

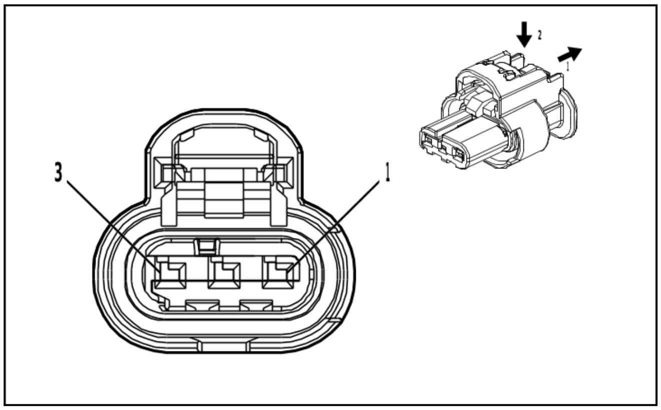
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306BB Front Parking Assist Alarm Sensor - Left Middle (UKZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / GY | (2) 5216 | (2) Left Front Middle Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

## B306CB Front Parking Assist Alarm Sensor - Right Middle (UKZ)



4994602

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

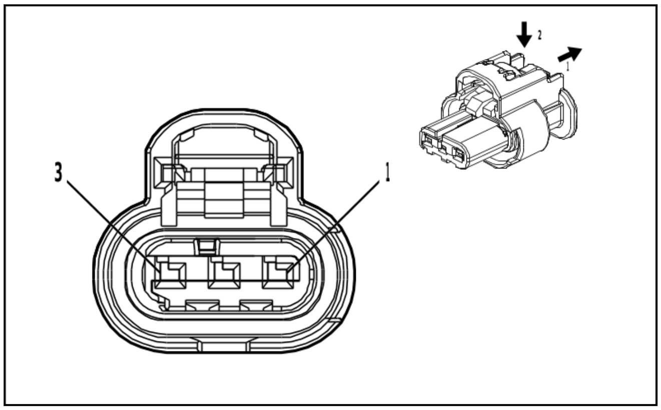
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B306CB Front Parking Assist Alarm Sensor - Right Middle (UKZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / GY | (2) 5218 | (2) Right Front Middle Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

### B306DB Front Parking Assist Alarm Outer Sensor - Right (UKZ)



4994602

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

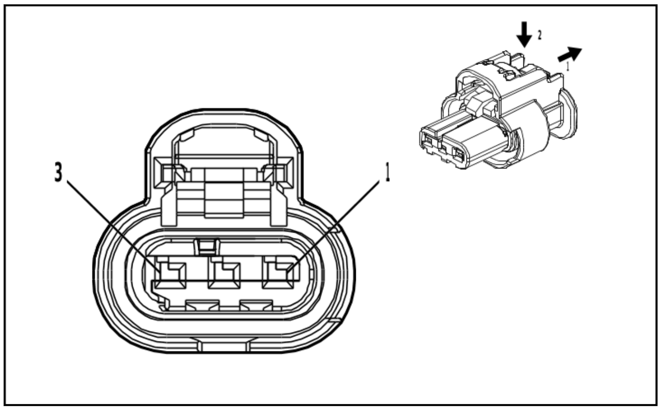
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306DB Front Parking Assist Alarm Outer Sensor - Right (UKZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN | (1) 6581 | (1) Front Parking Assist Display Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 5217 | (2) Right Front Outer Parking Assist Sensor | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 5214 | (3) Front Parking Assist Sensor Low Reference | (3) I | (3) — |

## B306EB Rear Parking Assist Alarm Outer Sensor - Left



4994602

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

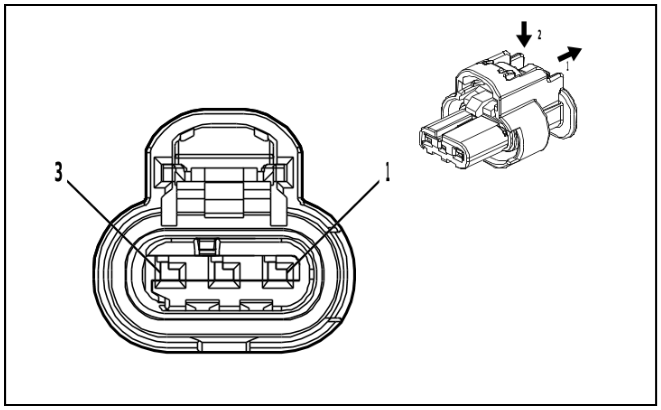
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B306EB Rear Parking Assist Alarm Outer Sensor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 2375 | (2) Left Rear Outer Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B306FB Rear Parking Assist Alarm Sensor - Left Middle



4994602

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

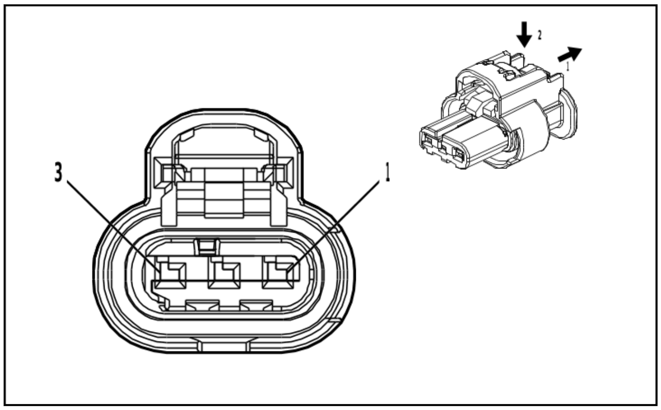
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306FB Rear Parking Assist Alarm Sensor - Left Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BU | (2) 2376 | (2) Left Rear Middle Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

## B306GB Rear Parking Assist Alarm Sensor - Right Middle



4994602

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

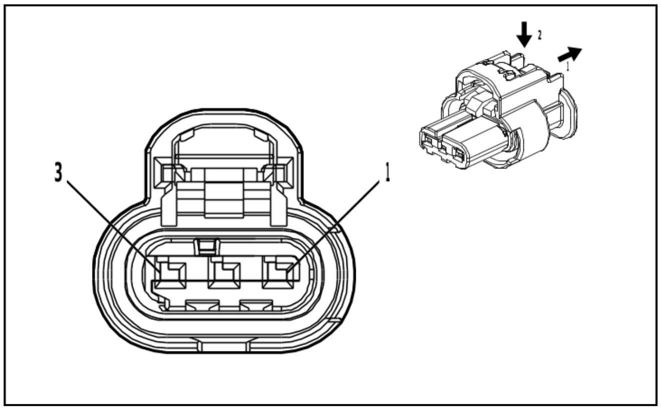
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306GB Rear Parking Assist Alarm Sensor - Right Middle

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 2377 | (2) Right Rear Middle Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

### B306HB Rear Parking Assist Alarm Outer Sensor - Right



4994602

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

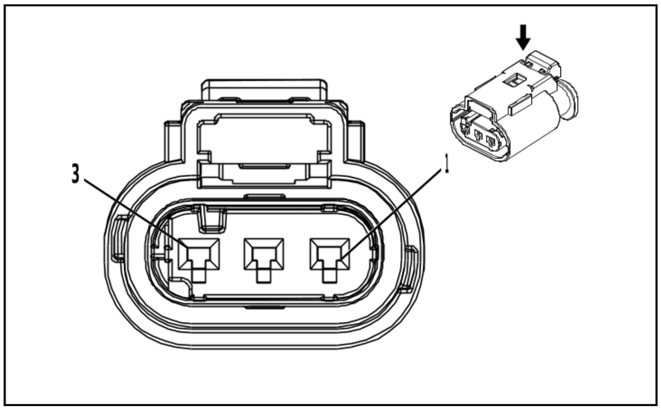
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B306HB Rear Parking Assist Alarm Outer Sensor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 2374 | (1) Object Sensor Voltage Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 2378 | (2) Right Rear Outer Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2379 | (3) Object Sensor Low Reference | (3) I | (3) — |

## B310 Fuel Pressure and Temperature Sensor (L84 / L87)



3240107

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 10010344
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.2 Multilock Series, Sealed( BK)

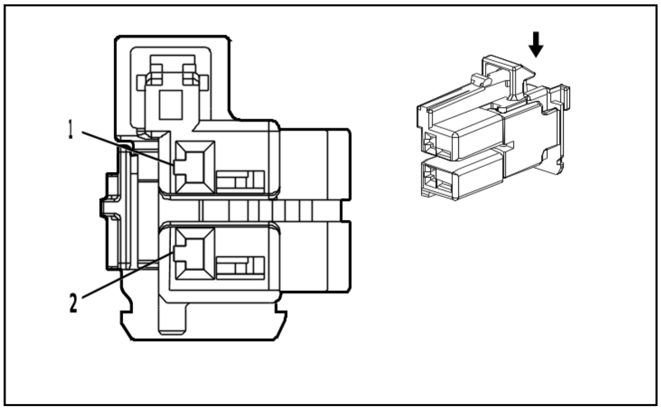
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B310 Fuel Pressure and Temperature Sensor (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 20 | (1) BK / GN | (1) 548 | (1) Engine Control Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 20 | (2) BU / WH | (2) 2918 | (2) Fuel Rail Pressure Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 20 | (3) BN / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |

### B315A Transmission Range Control Valve 1 Position Switch



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

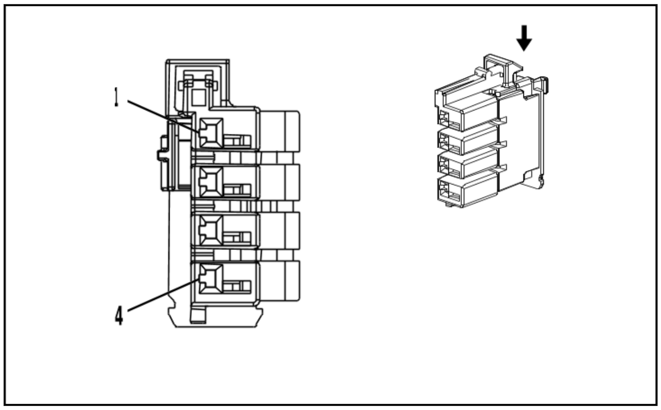
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B315A Transmission Range Control Valve 1 Position Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BU | (1) 4171 | (1) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK / GY | (2) 3706 | (2) Electronic Transmission Range Select Switch Analog Signal 1 | (2) I | (2) — |

### B316 Transmission Park Valve Position Switch



4364148

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13514144
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON Series( BN)

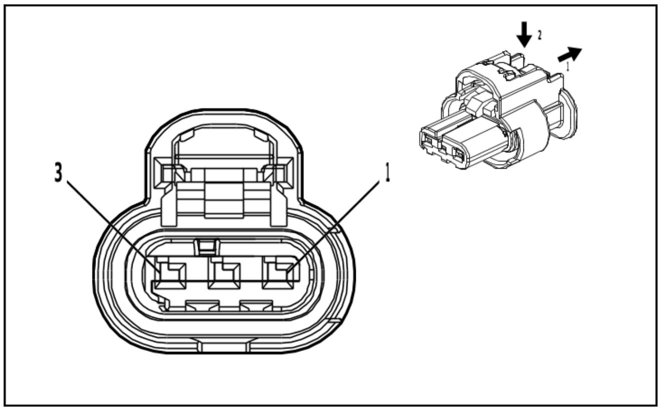
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B316 Transmission Park Valve Position Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) — | (2) GN | (2) 4170 | (2) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (2) I | (2) — |
| (3) 3 | (3) — | (3) YE | (3) 6317 | (3) Electronic Transmission Range Select Out of Park Switch Signal | (3) I | (3) — |
| (4) 4 | (4) — | (4) YE / GY | (4) 6319 | (4) Electronic Transmission Range Select Out of Park Switch 2 Signal | (4) I | (4) — |

### B321 Crankcase Pressure Sensor (LZ0)



4994602

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-3
- Service Connector: 19371199
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

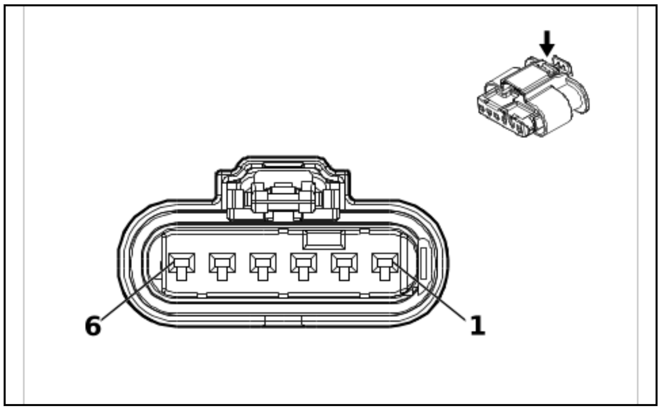
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B321 Crankcase Pressure Sensor (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GY | (1) 3926 | (1) Crankcase Differential Pressure Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / YE | (2) 548 | (2) Engine Control Sensors Low Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / RD | (3) 460 | (3) Engine Control Sensors 5 Volt Reference 1 | (3) I | (3) — |

### B342A UHF Low Energy Remote Control Access Sensor Transceiver 1 (BOR / BOY)



5835086

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 34900-6221
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 MCON-LL Series, Sealed( BK)

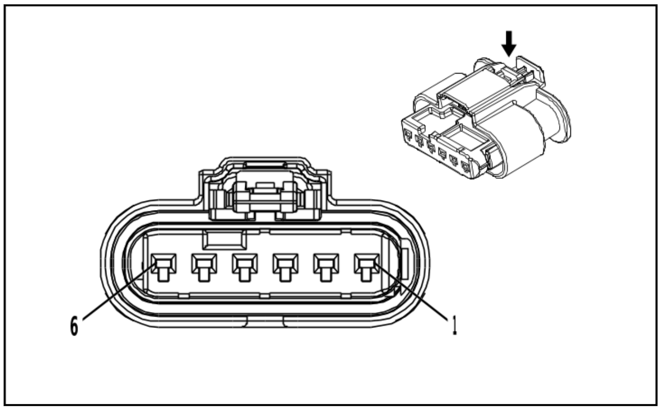
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B342A UHF Low Energy Remote Control Access Sensor Transceiver 1 (BOR / BOY)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 3140 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) Virtual Key Private CAN Bus [+] Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) Virtual Key Private CAN Bus [-] Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / WH | (6) 251 | (6) Signal Ground | (6) I | (6) — |

## B342B UHF Low Energy Remote Control Access Sensor Transceiver 2 (BOR / BOY)



4455148

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 34900-6228
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 MCON-LL Series, Sealed( BK)

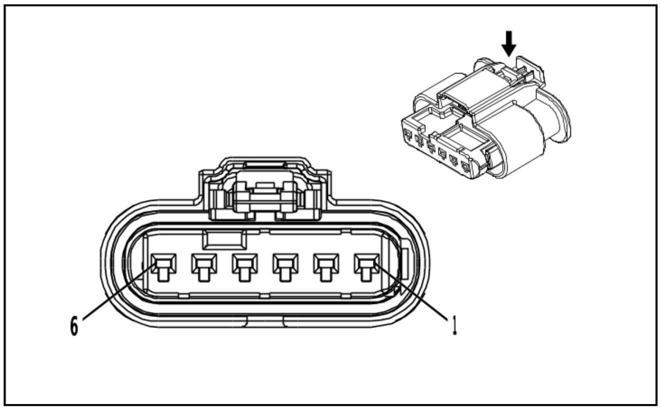
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B342B UHF Low Energy Remote Control Access Sensor Transceiver 2 (BOR / BOY)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GY | (1) 4840 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / YE | (2) 11325 | (2) Virtual Key Private CAN Bus [-] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / BN | (3) 11326 | (3) Virtual Key Private CAN Bus [+] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) Virtual Key Private CAN Bus [+] Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) Virtual Key Private CAN Bus [-] Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 1450 | (6) Ground | (6) I | (6) — |

## B342C UHF Low Energy Remote Control Access Sensor Transceiver 3 (BOR / BOY)



4455148

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 34900-6228
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 MCON-LL Series, Sealed( BK)

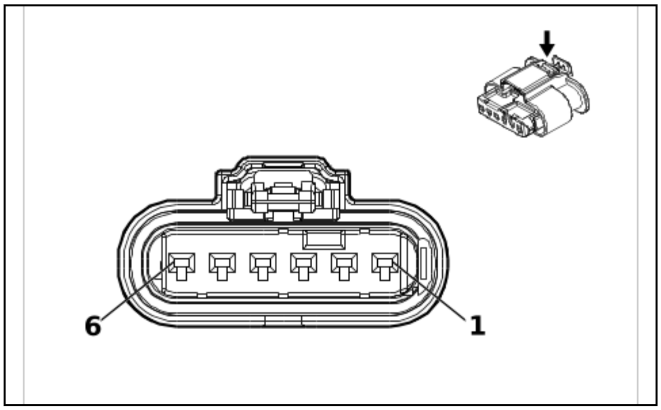
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B342C UHF Low Energy Remote Control Access Sensor Transceiver 3 (BOR / BOY)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 3140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / YE | (2) 11325 | (2) Virtual Key Private CAN Bus [-] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / BN | (3) 11326 | (3) Virtual Key Private CAN Bus [+] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) Virtual Key Private CAN Bus [+] Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) Virtual Key Private CAN Bus [-] Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / WH | (6) 251 | (6) Signal Ground | (6) I | (6) — |

## B342D UHF Low Energy Remote Control Access Sensor Transceiver 4 (BOR / BOY)



5835086

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 34900-6221
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 MCON-LL Series, Sealed( BK)

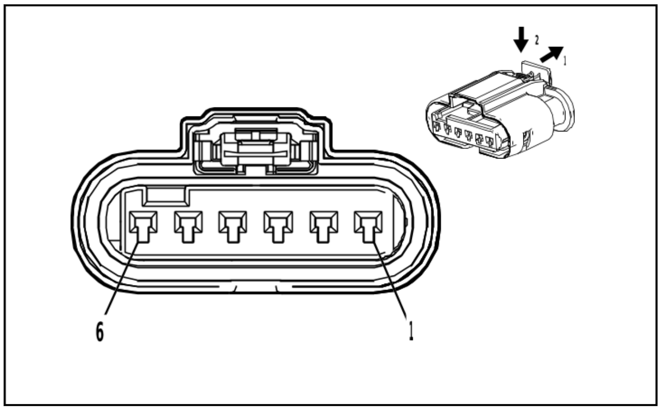
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B342D UHF Low Energy Remote Control Access Sensor Transceiver 4 (BOR / BOY)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GY | (1) 4840 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1450 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) Virtual Key Private CAN Bus [+] Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) Virtual Key Private CAN Bus [-] Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 1450 | (6) Ground | (6) I | (6) — |

### B342E UHF Low Energy Remote Control Access Sensor Transceiver 5 (BOR / BOY)



3960142

**Connector Part Information**

- Harness Type: Roof Wiring Harness
- OEM Connector: 34900-6219
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed( BK)

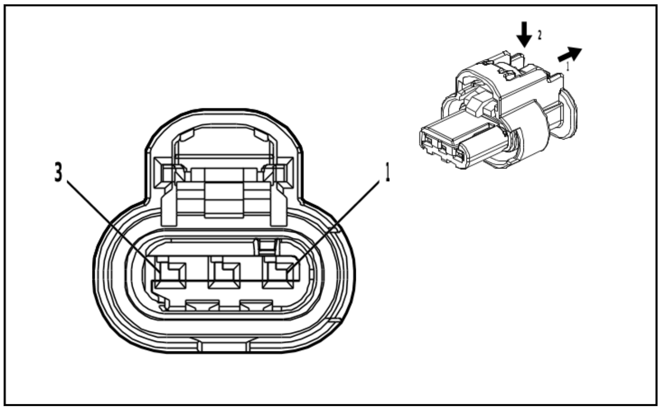
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B342E UHF Low Energy Remote Control Access Sensor Transceiver 5 (BOR / BOY)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GY | (1) 4840 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / YE | (2) 11325 | (2) Virtual Key Private CAN Bus [-] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / BN | (3) 11326 | (3) Virtual Key Private CAN Bus [+] Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) Virtual Key Private CAN Bus [+] Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) Virtual Key Private CAN Bus [-] Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 1450 | (6) Ground | (6) I | (6) — |

### B345P Exhaust Pressure Differential Sensor - Particulate Filter (LZ0)



4581126

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

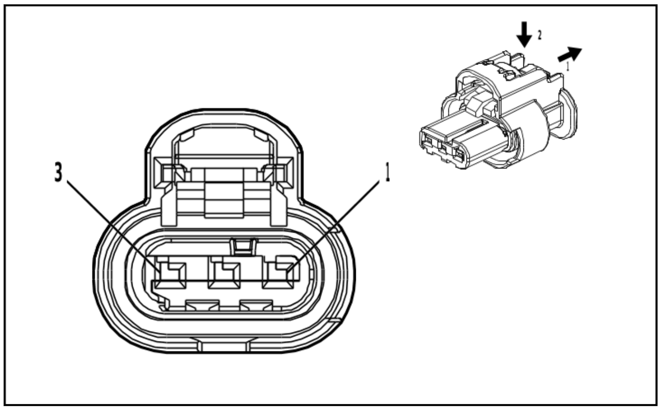
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B345P Exhaust Pressure Differential Sensor - Particulate Filter (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / RD | (1) 460 | (1) Engine Control Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / BN | (2) 2363 | (2) Exhaust Pressure Sensor SENT 1 Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 548 | (3) Engine Control Sensors Low Reference 1 | (3) I | (3) — |

## B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation (LZ0)



4778903

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-2
- Service Connector: 86792095
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

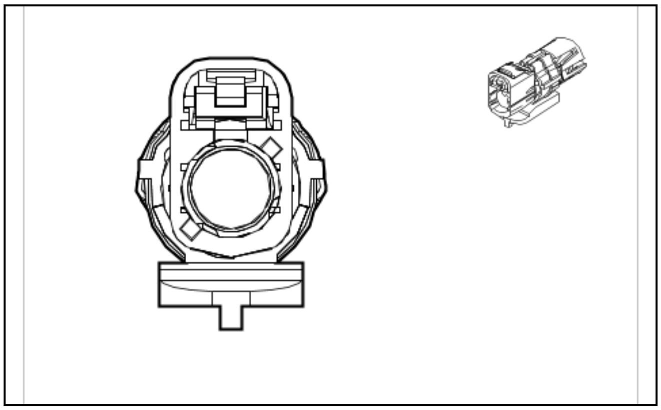
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / RD | (1) 460 | (1) Engine Control Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 10478 | (2) Low Pressure Exhaust Gas Recirculation Sensor SENT Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 548 | (3) Engine Control Sensors Low Reference 1 | (3) I | (3) — |

### B352 Video Display Inside Rearview Mirror Camera (DRZ)



5633894

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness COAX
- OEM Connector: 35187049
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed( BU)

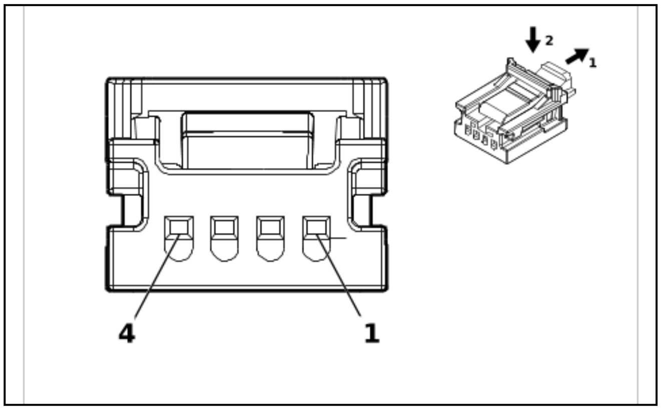
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## B352 Video Display Inside Rearview Mirror Camera (DRZ)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Full Display Mirror Rear Camera Coaxial Video Signal | I | — |

### B355HLF Communication Interface Module Headliner Microphone - Left Front



5493278

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 34791-5140
- Service Connector: 19354840
- Description: 4-Way F Mini 50 Series( BK)

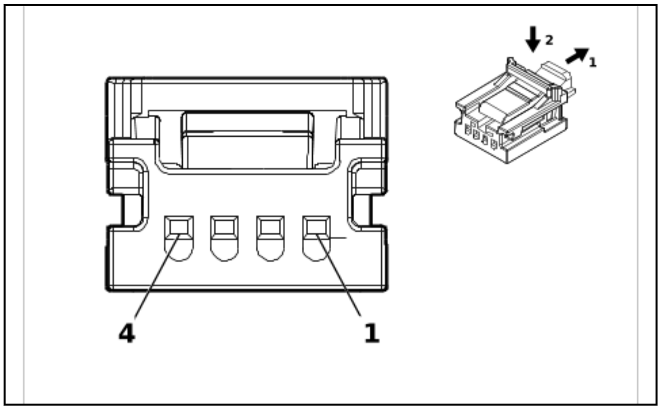
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## B355HLF Communication Interface Module Headliner Microphone - Left Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU | (1) 8579 | (1) Automotive Audio Bus A2B Serial Data 1 [-] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN | (2) 8580 | (2) Automotive Audio Bus A2B Serial Data 1 [+] | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN | (3) 8580 | (3) Automotive Audio Bus A2B Serial Data 1 [+] | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 8579 | (4) Automotive Audio Bus A2B Serial Data 1 [-] | (4) I | (4) — |

### B355HRF Communication Interface Module Headliner Microphone - Right Front



5493278

**Connector Part Information**
- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 34791-5140
- Service Connector: 19354840
- Description: 4-Way F Mini 50 Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## B355HRF Communication Interface Module Headliner Microphone - Right Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU | (1) 8579 | (1) Automotive Audio Bus A2B Serial Data 1 [-] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN | (2) 8580 | (2) Automotive Audio Bus A2B Serial Data 1 [+] | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN | (3) 8580 | (3) Automotive Audio Bus A2B Serial Data 1 [+] | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 8579 | (4) Automotive Audio Bus A2B Serial Data 1 [-] | (4) I | (4) — |

## B359 Exhaust Gas Temperature Sensor Module (LZ0)

GRAPHIC
PENDING

6952635

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551874
- Service Connector: 84777453
- Description: 3-Way F 1.2 MLK Series, Sealed( GY)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B359 Exhaust Gas Temperature Sensor Module (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 10289 | (1) Exhaust Gas Temperature Sensor SENT 1 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 580 | (2) Engine Control Sensors Low Reference 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |

## B359B Exhaust Gas Temperature Sensor Module 2 (LZ0)

GRAPHIC
PENDING

6952635

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 13551874
- Service Connector: 84777453
- Description: 3-Way F 1.2 MLK Series, Sealed( GY)

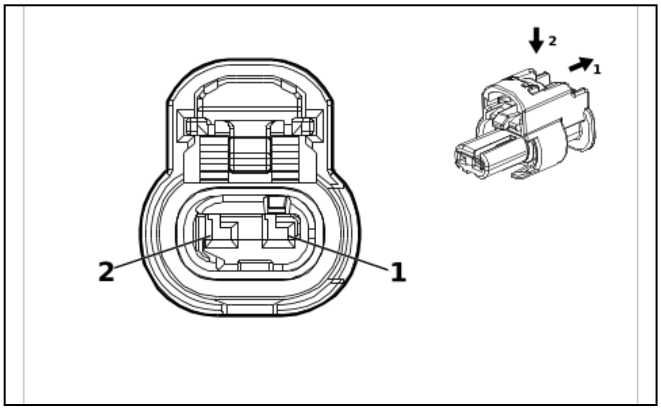
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### B359B Exhaust Gas Temperature Sensor Module 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 10290 | (1) Exhaust Gas Temperature Sensor SENT 2 Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 580 | (2) Engine Control Sensors Low Reference 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |

### E2LF Front Side Marker Lamp - Left



4649903

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

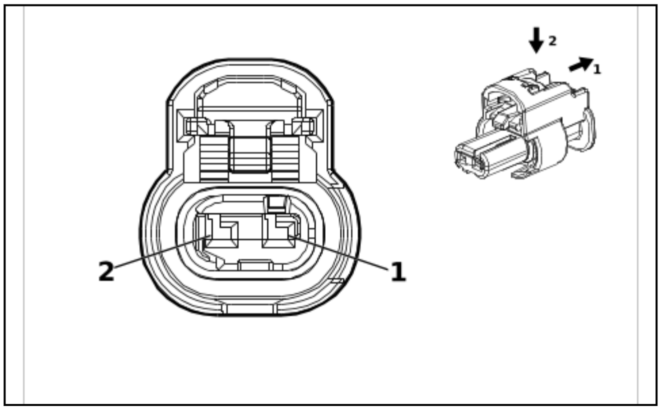
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E2LF Front Side Marker Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / YE | (1) 1254 | (1) Left Front Park Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5<br>(2) 0.75 | (2) BK<br>(2) BK | (2) 150<br>(2) 150 | (2) Ground<br>(2) Ground | (2) I<br>(2) I | (2) T40<br>(2) - T40 |

### E2RF Front Side Marker Lamp - Right



4649903

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

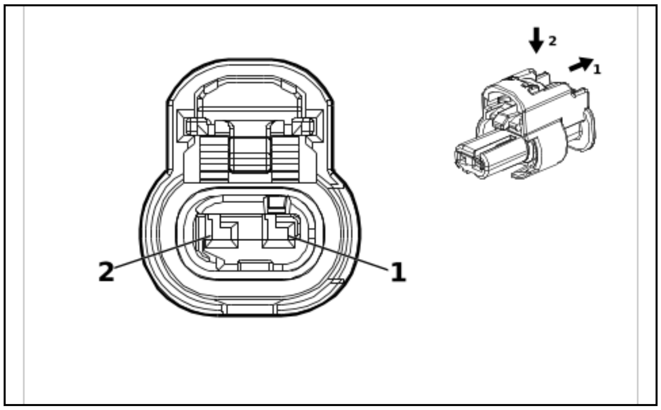
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E2RF Front Side Marker Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / GN | (1) 1253 | (1) Right Front Park Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.5<br>(2) 0.75 | (2) BK<br>(2) BK | (2) 250<br>(2) 250 | (2) Ground<br>(2) Ground | (2) I<br>(2) I | (2) T40<br>(2) - T40 |

### E6 High Mount Stop Lamp



4649903

**Connector Part Information**

- Harness Type: High Mount Stop Lamp Wiring Harness
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

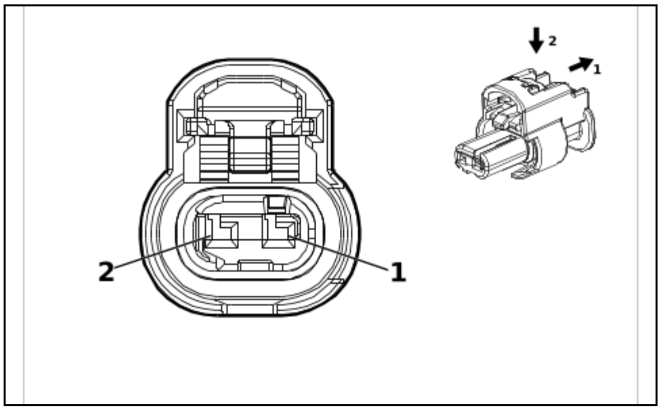
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E6 High Mount Stop Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 8350 | (1) Antenna Filter Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / YE | (2) 820 | (2) Center High Mounted Stop Lamp Supply Voltage | (2) I | (2) — |

### E7L Rear License Plate Lamp - Left



4649903

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

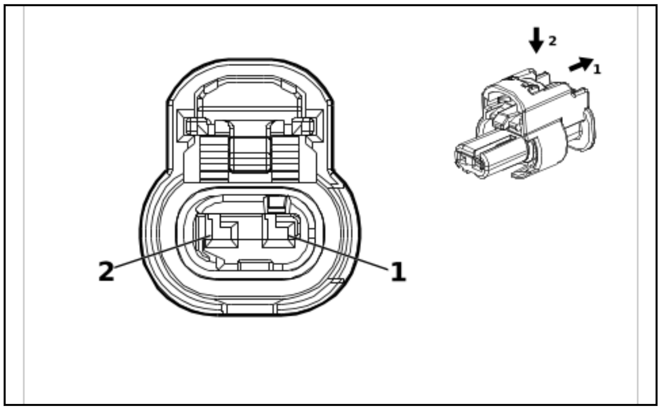
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E7L Rear License Plate Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 2050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / YE | (2) 6846 | (2) Rear License Plate Lamp Control | (2) I | (2) — |

### E7R Rear License Plate Lamp - Right



4649903

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

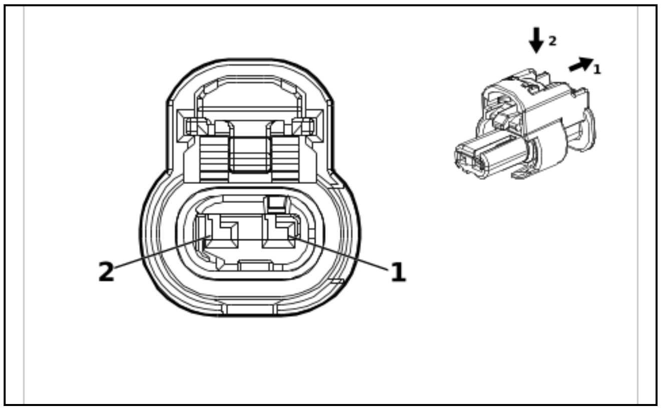
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E7R Rear License Plate Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 2050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / YE | (2) 6846 | (2) Rear License Plate Lamp Control | (2) I | (2) — |

### E8A Front Side Door Sill Plate Illumination Lamp - Left (S0M)



4649903

**Connector Part Information**

- Harness Type: Door Sill Plate Lamp Accessory Wiring HarnesS
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

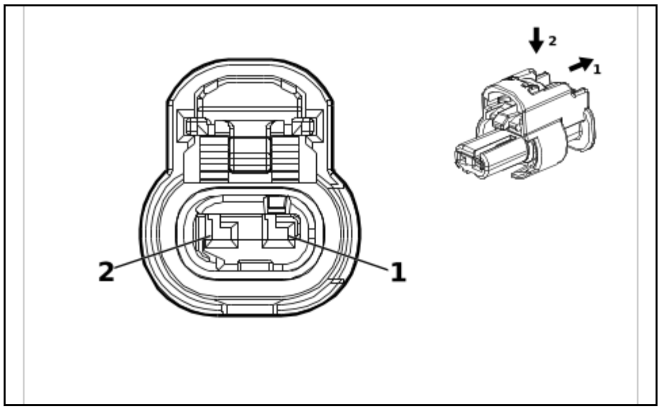
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8A Front Side Door Sill Plate Illumination Lamp - Left (S0M)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT | (1) 7558 | (1) Front Footwell Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### E8B Front Side Door Sill Plate Illumination Lamp - Right (S0M)



4649903

**Connector Part Information**

- Harness Type: Door Sill Plate Lamp Accessory Wiring HarnesS
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

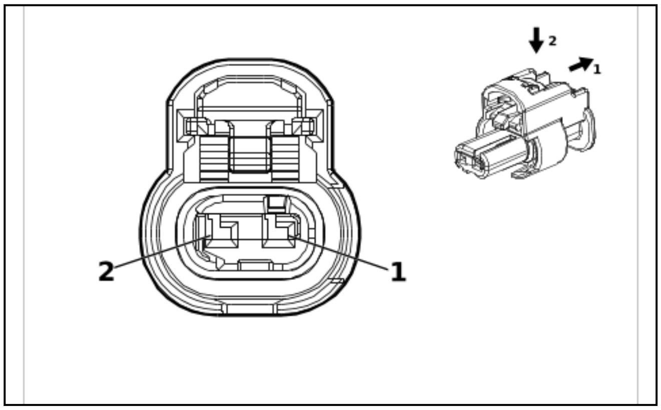
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8B Front Side Door Sill Plate Illumination Lamp - Right (S0M)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT | (1) 7558 | (1) Front Footwell Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### E8Q Rear Side Door Sill Plate Illumination Lamp - Left (S0M)



4649903

**Connector Part Information**

- Harness Type: Door Sill Plate Lamp Accessory Wiring Harness
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

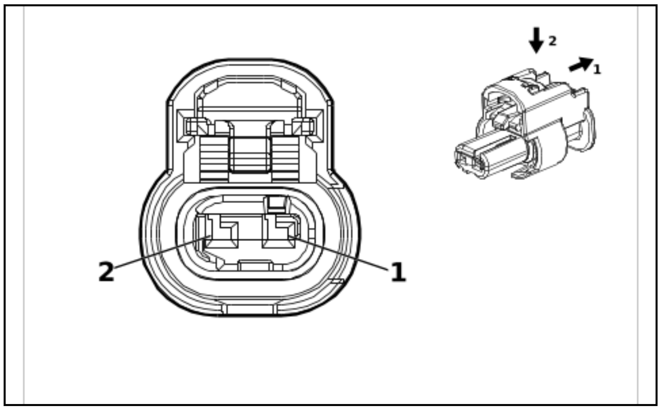
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8Q Rear Side Door Sill Plate Illumination Lamp - Left (S0M)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 4783 | (1) Rear Footwell Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### E8R Rear Side Door Sill Plate Illumination Lamp - Right (S0M)



4649903

**Connector Part Information**
- Harness Type: Door Sill Plate Lamp Accessory Wiring Harness
- OEM Connector: 13512365
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

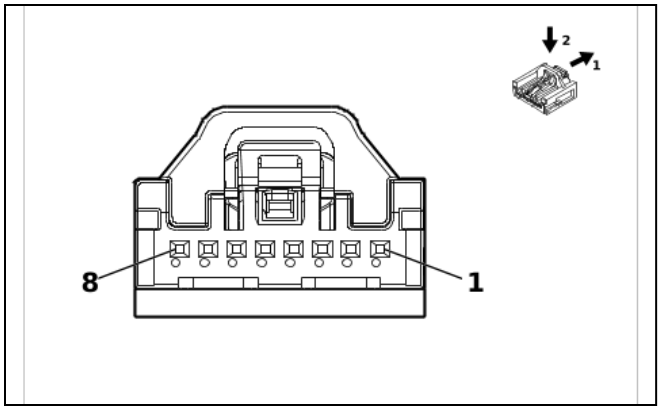
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8R Rear Side Door Sill Plate Illumination Lamp - Right (S0M)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 4783 | (1) Rear Footwell Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

## E8SR Cargo Center Courtesy Lamp



5810859

**Connector Part Information**

- Harness Type: Roof Wiring Harness
- OEM Connector: 35068230
- Service Connector: 87822422
- Description: 8-Way F Mini 50 Series( GY)

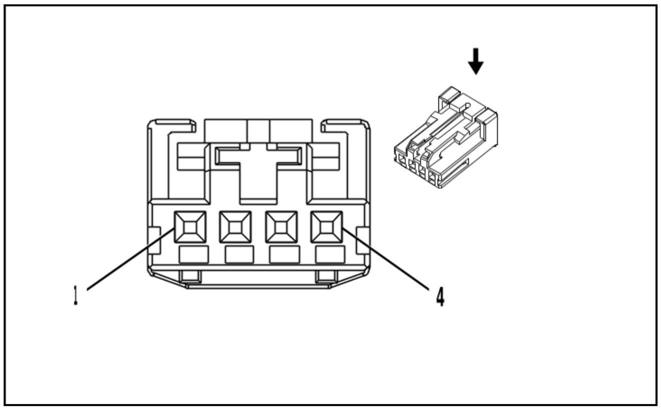
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## E8SR Cargo Center Courtesy Lamp

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / GY | (1) 737 | (1) Rear Compartment Courtesy Lamp Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 2050 | (3) Ground | (3) I | (3) — |
| 4 - 8 | — | — | — | Not Occupied | — | — |

## E8VA Front Floor Courtesy Lamp - Left



2717162

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

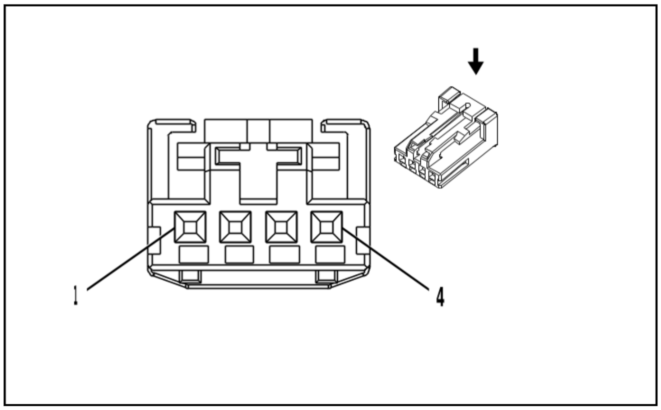
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### E8VA Front Floor Courtesy Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1850 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / BK | (2) 4782 | (2) Instrument Panel Accent Lighting Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 157 | (3) Interior Lamp Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## E8VB Rear Floor Courtesy Lamp - Left



2717162

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

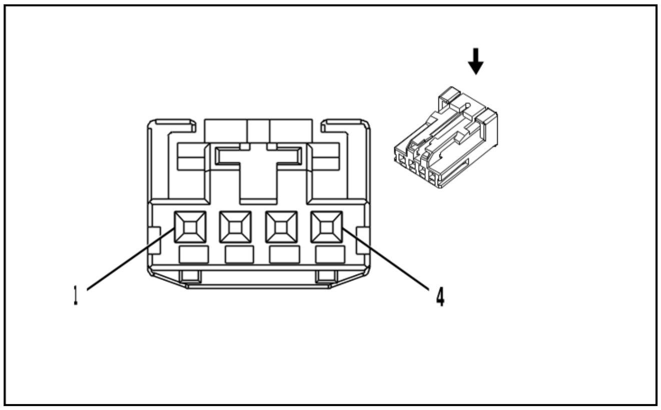
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## E8VB Rear Floor Courtesy Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1150 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 157 | (3) Interior Lamp Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## E8VC Front Floor Courtesy Lamp - Right



2717162

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

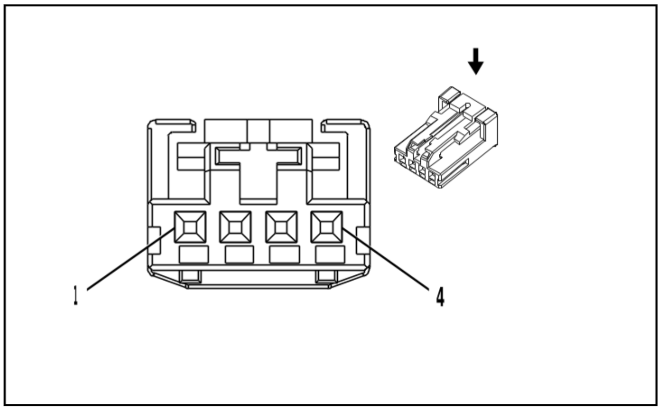
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## E8VC Front Floor Courtesy Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / BK | (2) 4782 | (2) Instrument Panel Accent Lighting Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 157 | (3) Interior Lamp Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## E8VD Rear Floor Courtesy Lamp - Right



2717162

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

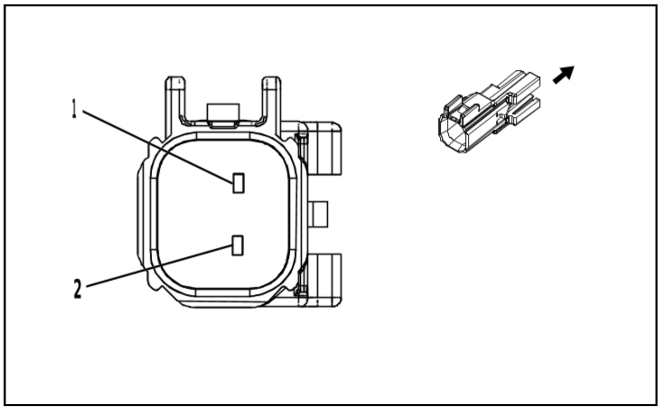
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## E8VD Rear Floor Courtesy Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1250 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 157 | (3) Interior Lamp Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### E8ZL Assist Step Lamp - Left (B3L)



3271068

**Connector Part Information**

- Harness Type: Left Assist Step
- OEM Connector: 13503926
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.5 Series, Sealed( BK)

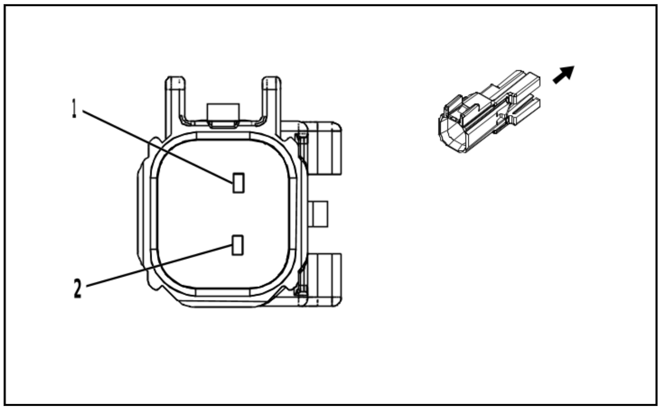
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8ZL Assist Step Lamp - Left (B3L)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1650 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 4748 | (2) Left Running Board Step Courtesy Lamp Control | (2) I | (2) — |

### E8ZR Assist Step Lamp - Right (B3L)



3271068

**Connector Part Information**

- Harness Type: Right Assist Step
- OEM Connector: 13503926
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.5 Series, Sealed( BK)

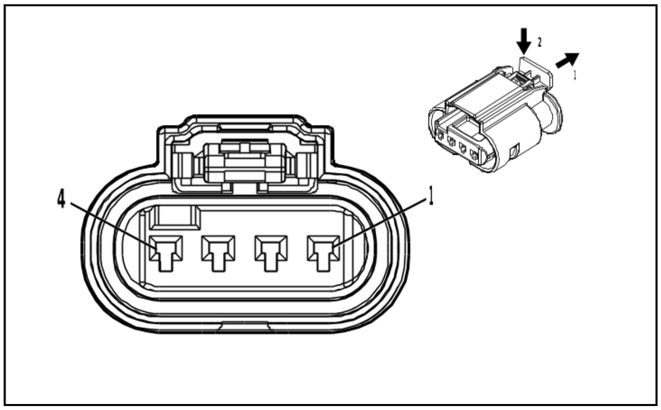
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E8ZR Assist Step Lamp - Right (B3L)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1650 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / VT | (2) 4749 | (2) Right Running Board Step Courtesy Lamp Control | (2) I | (2) — |

### E9LGL Emergency Vehicle Warning Rear Lamp - Liftgate Left (5W4 / 9C1)



4994577

**Connector Part Information**
- Harness Type: Liftgate Wiring Harness
- OEM Connector: 34900-4120
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

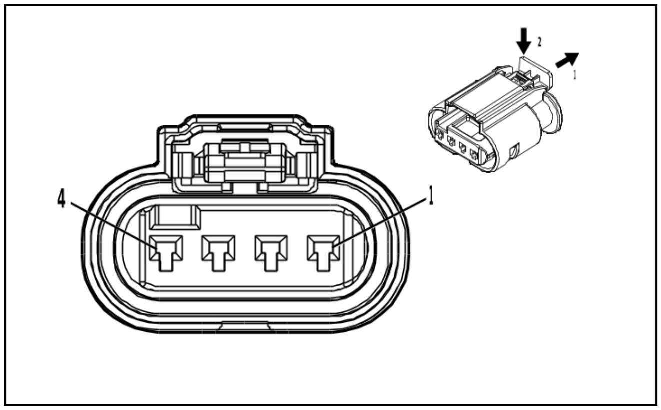
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E9LGL Emergency Vehicle Warning Rear Lamp - Liftgate Left (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT | (1) 8866 | (1) Police Liftgate Strobe Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) WH | (3) 8867 | (3) Police Liftgate Strobe Synchronization Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## E9LGR Emergency Vehicle Warning Rear Lamp - Liftgate Right (5W4 / 9C1)



4994577

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 34900-4120
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

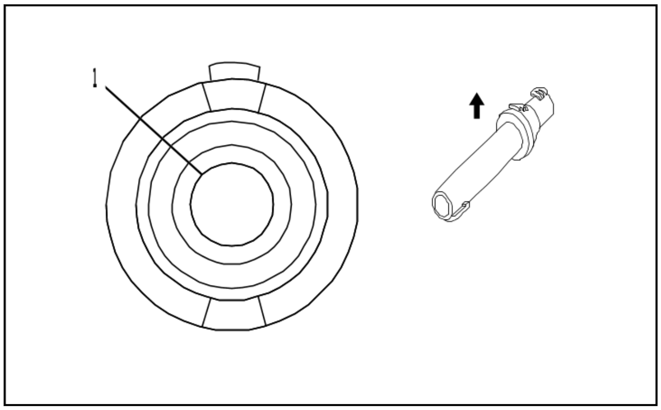
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### E9LGR Emergency Vehicle Warning Rear Lamp - Liftgate Right (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT | (1) 8866 | (1) Police Liftgate Strobe Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) WH | (3) 8867 | (3) Police Liftgate Strobe Synchronization Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### E12A Glow Plug 1



2231591

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 4.0 Series( BK)

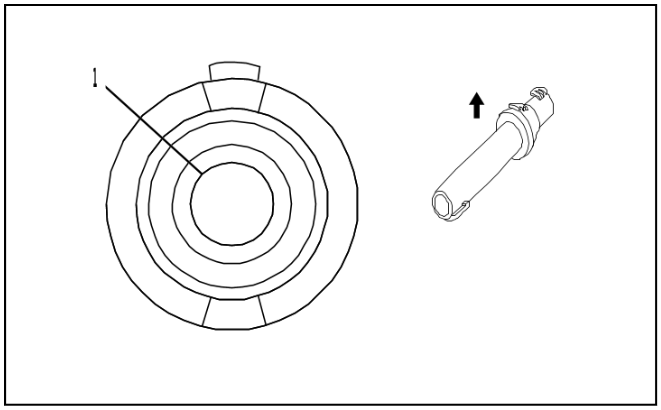
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-37 (L-BU) | No Tool Required |

## E12A Glow Plug 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / RD | (1) 1581 | (1) Glow Plug 1 Control | (1) I | (1) — |

### E12B Glow Plug 2



2231591

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 4.0 Series( BK)

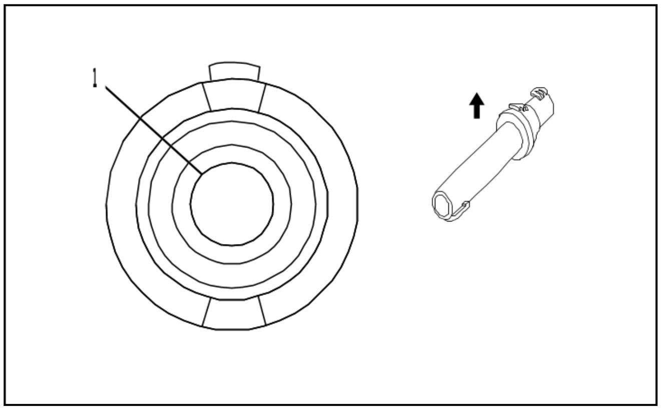
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-37 (L-BU) | No Tool Required |

## E12B Glow Plug 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BK | (1) 1582 | (1) Glow Plug 2 Control | (1) I | (1) — |

### E12C Glow Plug 3



2231591

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 4.0 Series( BK)

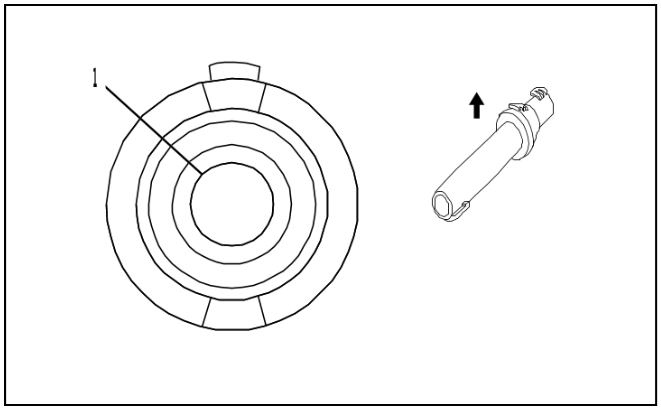
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-37 (L-BU) | No Tool Required |

## E12C Glow Plug 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / GN | (1) 1583 | (1) Glow Plug 3 Control | (1) I | (1) — |

### E12D Glow Plug 4



2231591

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 4.0 Series( BK)

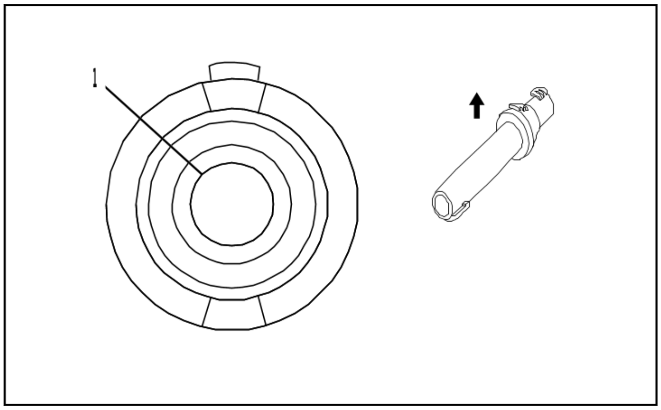
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-37 (L-BU) | No Tool Required |

## E12D Glow Plug 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / YE | (1) 1584 | (1) Glow Plug 4 Control | (1) I | (1) — |

### E12E Glow Plug 5



2231591

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 4.0 Series( BK)

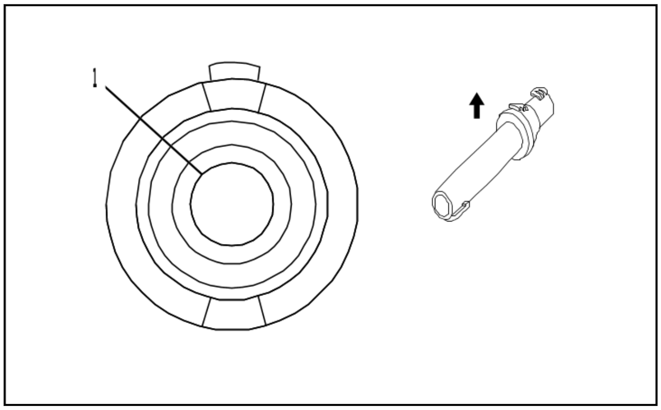
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-37 (L-BU) | No Tool Required |

## E12E Glow Plug 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / WH | (1) 1585 | (1) Glow Plug 5 Control | (1) I | (1) — |

### E12F Glow Plug 6



2231591

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 284818-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 4.0 Series( BK)

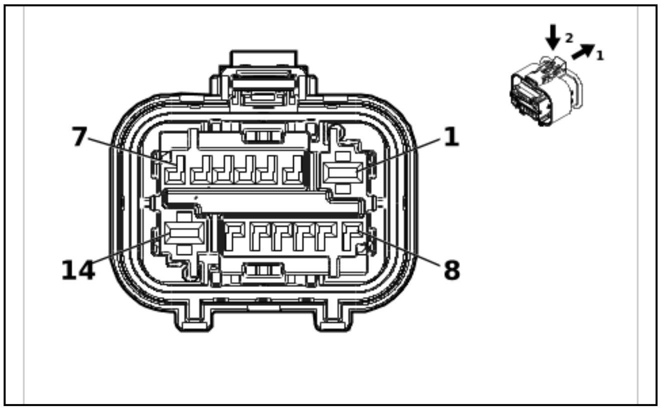
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-37 (L-BU) | No Tool Required |

## E12F Glow Plug 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY | (1) 1586 | (1) Glow Plug 6 Control | (1) I | (1) — |

## E13LA Front Headlamp - Left



6650652

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12192300
- Service Connector: 85086087
- Description: 14-Way F 1.2 MCON, 2.8 MCP Series, Sealed( BK)

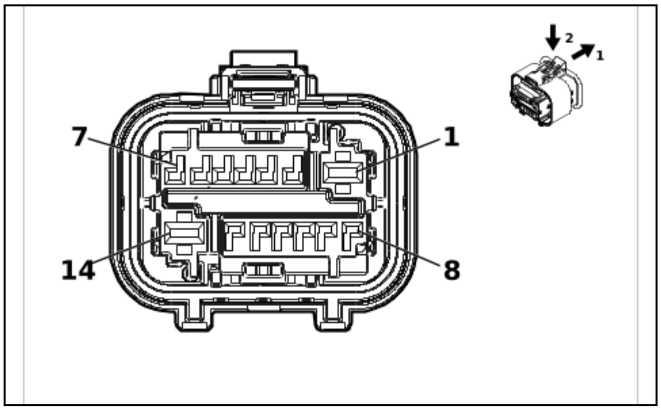
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | 85533337 | J-35616-35 (VT) | J-38125-11A |

### E13LA Front Headlamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 150 | (1) Ground | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 712 | (2) Left Headlamp Low Beam Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH | (3) 711 | (3) Left Headlamp High Beam Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GY / BU | (4) 7538 | (4) Left Front DRL Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / WH | (5) 1314 | (5) Left Front Turn Signal Lamp Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) VT / BK | (6) 6568 | (6) Front Turn Signal Lamp Feedback Signal | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE / GN | (9) 2024 | (9) Animation Lighting Control | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GY / BN | (10) 10749 | (10) Sequential Turn Lamp Enable Signal | (10) I | (10) — |
| 11 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 1.5 | (14) RD / WH | (14) 640 | (14) Battery Positive Voltage | (14) II | (14) — |

## E13RA Front Headlamp - Right



6650652

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12192300
- Service Connector: 85086087
- Description: 14-Way F 1.2 MCON, 2.8 MCP Series, Sealed( BK)

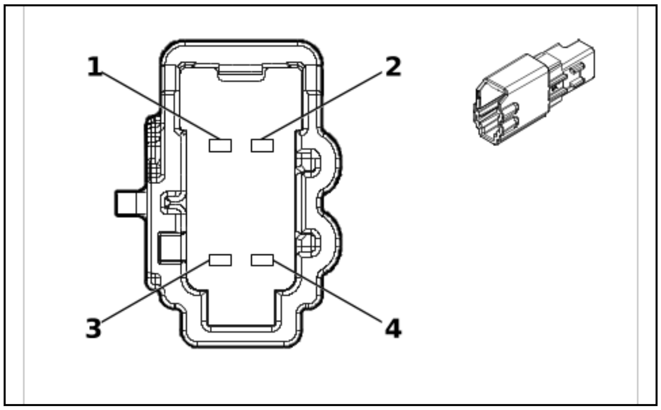
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | 85533337 | J-35616-35 (VT) | J-38125-11A |

### E13RA Front Headlamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 250 | (1) Ground | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 312 | (2) Right Headlamp Low Beam Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH | (3) 311 | (3) Right Headlamp High Beam Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / BN | (4) 7539 | (4) Right Front DRL Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / VT | (5) 1315 | (5) Right Front Turn Signal Lamp Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / YE | (6) 7545 | (6) Right Front Turn Signal Lamp Feedback Signal | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE / GN | (9) 2024 | (9) Animation Lighting Control | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GY / BN | (10) 10749 | (10) Sequential Turn Lamp Enable Signal | (10) I | (10) — |
| 11 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 1.5 | (14) RD / YE | (14) 740 | (14) Battery Positive Voltage | (14) II | (14) — |

## E14A Front Seat Back Heater - Driver



5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

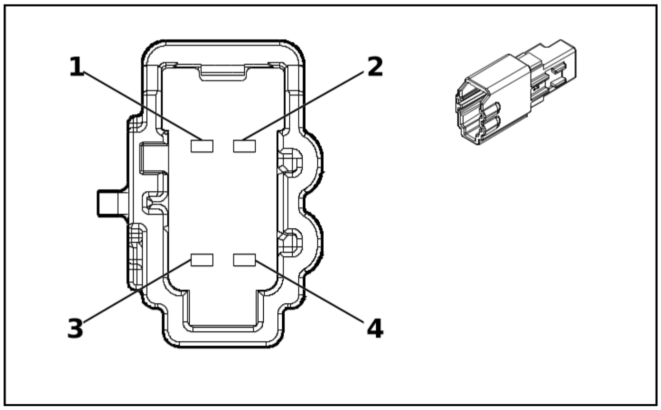
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14A Front Seat Back Heater - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN | (1) 2432 | (1) Driver Seat Back Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 2425 | (2) Driver Seat Back Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 2080 | (3) Driver Heated Seat Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2078 | (4) Driver Seat Heating Element Low Reference | (4) I | (4) — |

## E14B Front Seat Cushion Heater - Driver



5360963

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

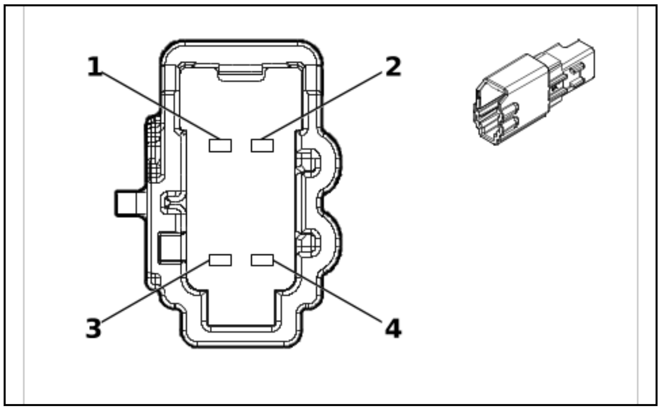
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14B Front Seat Cushion Heater - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / VT | (1) 2077 | (1) Driver Seat Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / GY | (2) 2079 | (2) Driver Seat Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 2080 | (3) Driver Heated Seat Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2078 | (4) Driver Seat Heating Element Low Reference | (4) I | (4) — |

### E14C Front Seat Back Heater - Passenger



5423974

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

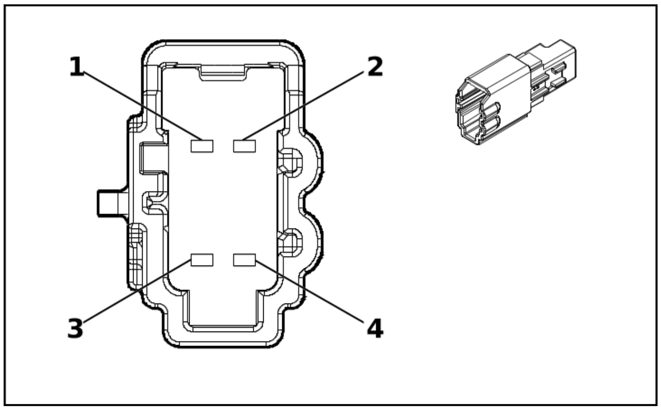
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

## E14C Front Seat Back Heater - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BN | (1) 2481 | (1) Passenger Seat Back Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / BU | (2) 2436 | (2) Passenger Seat Back Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 2482 | (3) Passenger Heated Back Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GY / BK | (4) 2480 | (4) Passenger Seat Heating Element Low Reference | (4) I | (4) — |

## E14D Front Seat Cushion Heater - Passenger



5360963

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9046
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

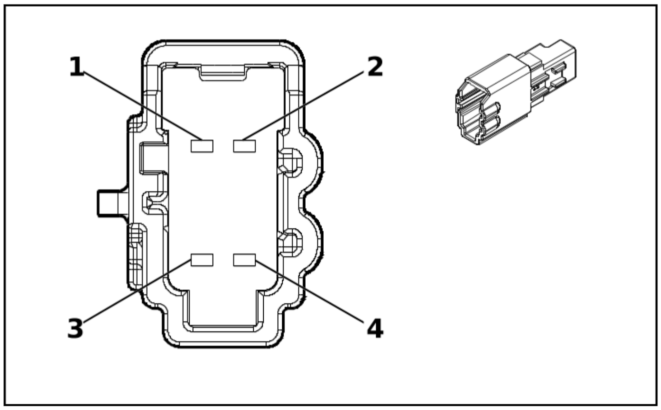
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

### E14D Front Seat Cushion Heater - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 2479 | (1) Passenger Seat Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 2434 | (2) Passenger Seat Heating Temperature Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GY | (3) 2435 | (3) Passenger Heated Seat Thermistor Low Reference | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GY / BK | (4) 2480 | (4) Passenger Seat Heating Element Low Reference | (4) I | (4) — |

## E14F Rear Seat Cushion Heater - Left Rear (KA6)



5360963

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Left Cushion
- OEM Connector: 13530132
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

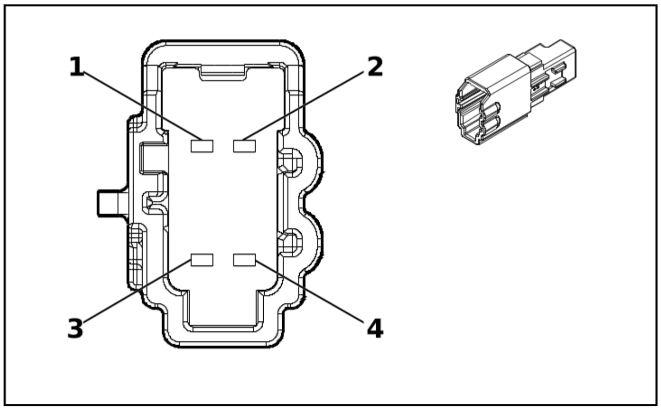
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### E14F Rear Seat Cushion Heater - Left Rear (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) GY | (1) 2294 | (1) Left Rear Seat Cushion Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) WH / BU | (2) 7047 | (2) Left Rear Seat Cushion Temperature Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) — | (3) BU / WH | (3) 7048 | (3) Left Rear Cushion Thermistor Feedback Signal | (3) I | (3) — |
| (4) 4 | (4) — | (4) BU / BK | (4) 2446 | (4) Left Rear Seat Heating Element Low Reference | (4) I | (4) — |

### E14H Rear Seat Cushion Heater - Right Rear (KA6)



5360963

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Right Cushion
- OEM Connector: 13530132
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( BK)

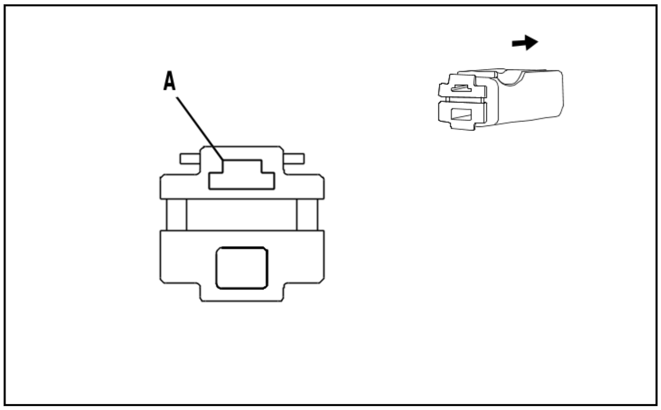
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E14H Rear Seat Cushion Heater - Right Rear (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) GN / BN | (1) 2296 | (1) Right Rear Seat Cushion Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) YE / WH | (2) 7053 | (2) Right Rear Seat Cushion Temperature Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) — | (3) WH / BK | (3) 7054 | (3) Right Rear Cushion Thermistor Feedback Signal | (3) I | (3) — |
| (4) 4 | (4) — | (4) GN / BK | (4) 2457 | (4) Right Rear Seat Heating Element Low Reference | (4) I | (4) — |

### E18 Rear Window Defogger Grid X1



4248834

**Connector Part Information**
- Harness Type: Liftgate Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 250 Series( BK)

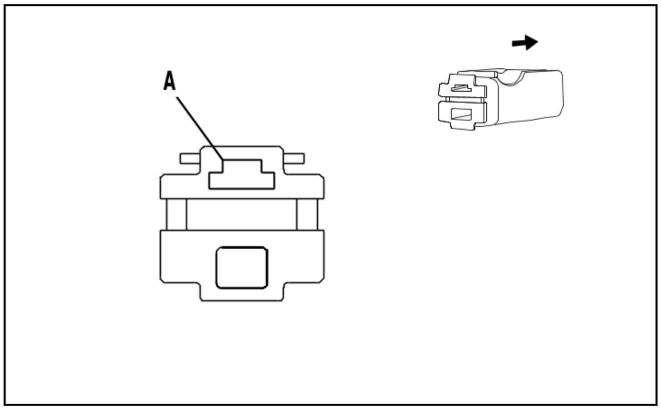
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## E18 Rear Window Defogger Grid X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | BN / VT | 293 | Rear Defogger Grid Control | I | — |

### E18 Rear Window Defogger Grid X2



4248834

**Connector Part Information**
- Harness Type: Liftgate Wiring Harness
- OEM Connector: 7123-5014-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F 250 Series( BK)

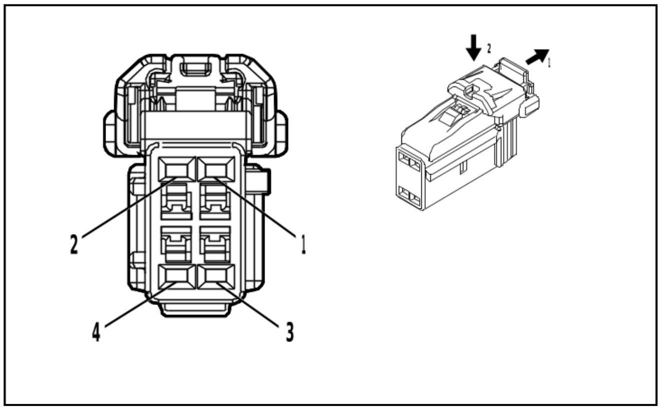
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## E18 Rear Window Defogger Grid X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 2.5 | BK | 2050 | Ground | I | — |

### E28 Front Floor Console Compartment Lamp (D07)



4872683

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

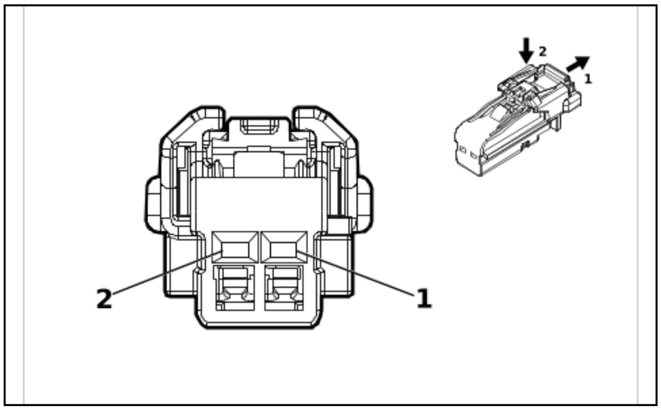
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E28 Front Floor Console Compartment Lamp (D07)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) YE | (4) 6817 | (4) LED Backlight Dimming Control 1 | (4) I | (4) — |

### E28 Front Floor Console Compartment Lamp (DCH)



4115691

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

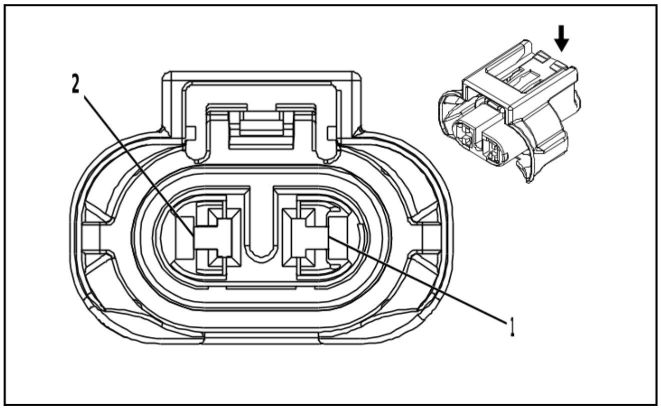
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E28 Front Floor Console Compartment Lamp (DCH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 1250 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN / VT | (2) 4786 | (2) Dome/Reading Lamp Enable Signal | (2) I | (2) — |

### E29LF Front Fog Lamp - Left (T40)



3404058

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13818129
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

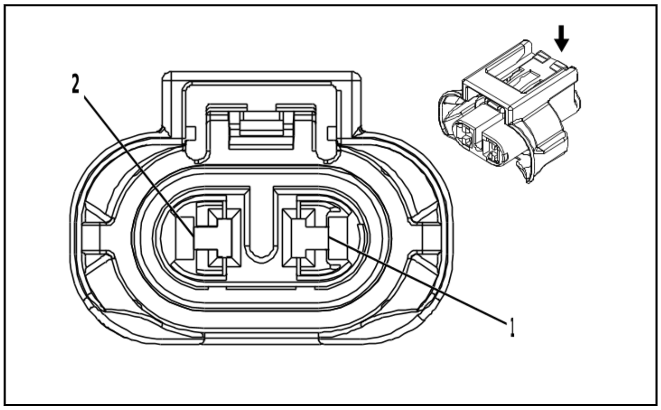
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## E29LF Front Fog Lamp - Left (T40)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BN / GY | (1) 5061 | (1) Left Front Fog Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) BK | (2) 150 | (2) Ground | (2) I | (2) — |

### E29RF Front Fog Lamp - Right (T40)



3404058

**Connector Part Information**
- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13818129
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

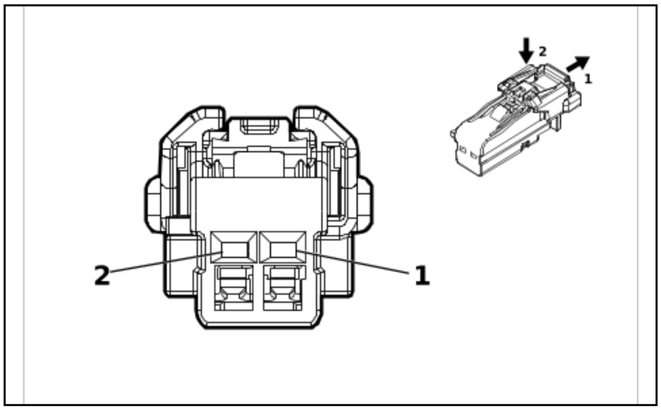
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## E29RF Front Fog Lamp - Right (T40)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BN / GY | (1) 5061 | (1) Left Front Fog Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) BK | (2) 250 | (2) Ground | (2) I | (2) — |

### E31L Sunshade Mirror Lamp - Left



5377746

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series( BN)

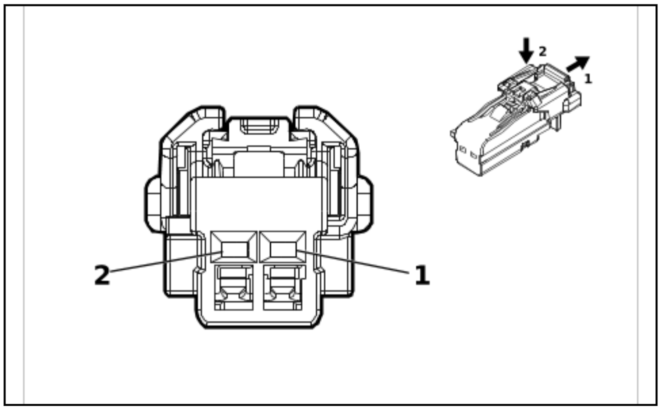
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E31L Sunshade Mirror Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / GN | (1) 4785 | (1) Interior Lamp Overhead Enable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E31R Sunshade Mirror Lamp - Right



5377746

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series( BN)

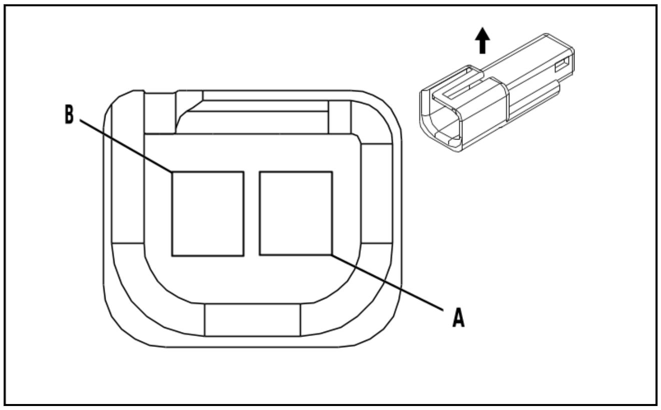
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E31R Sunshade Mirror Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / WH | (1) 2369 | (1) Interior Lamp Overhead 2 Enable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |

### E35L Spot Lamp - Left (5W4 / 9C1)



35441

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13649649
- Service Connector: 85675536
- Description: 2-Way M 150 Metri-Pack Series( BK)

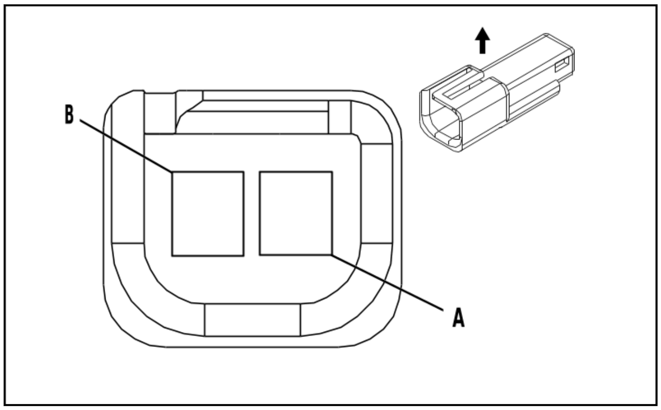
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-3 (GY) | No Tool Required |

## E35L Spot Lamp - Left (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| _26CA - _26CD | — | — | — | Not Occupied | — | — |
| A | 0.5 | BK | 1850 | Ground | I | — |
| B | 0.75 | RD / GN | 10240 | Battery Positive Voltage Police | I | — |

### E35R Spot Lamp - Right (5W4 / 9C1)



35441

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13649649
- Service Connector: 85675536
- Description: 2-Way M 150 Metri-Pack Series( BK)

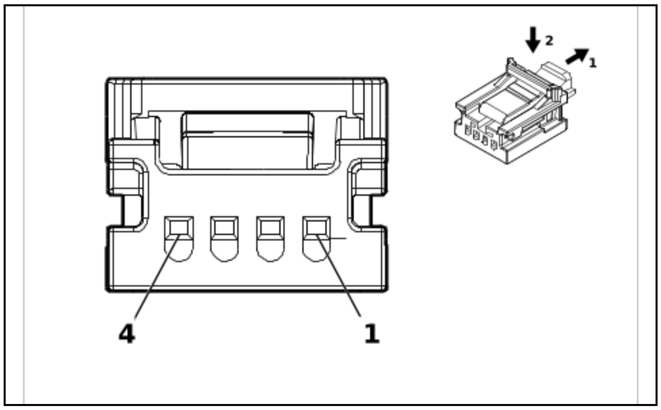
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-3 (GY) | No Tool Required |

## E35R Spot Lamp - Right (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| _26CA - _26CD | — | — | — | Not Occupied | — | — |
| A | 0.35 | BK | 1050 | Ground | I | — |
| B | 0.75 | RD / GY | 10340 | Battery Positive Voltage Police | I | — |

### E37H Roof Rail Rear Seat Position Reading and Courtesy Lamp - Left (C3U)



5493278

**Connector Part Information**
- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 34791-5140
- Service Connector: 19354840
- Description: 4-Way F Mini 50 Series( BK)

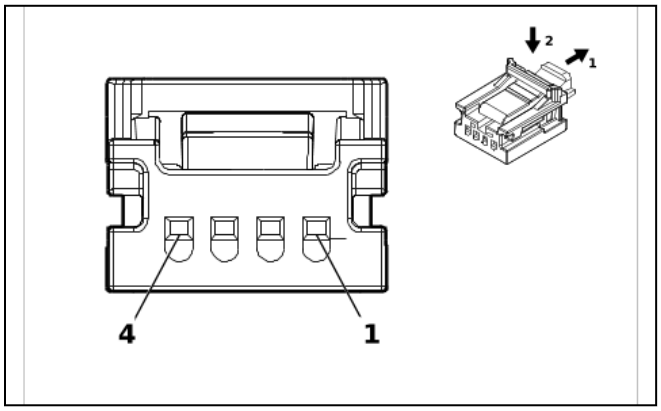
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## E37H Roof Rail Rear Seat Position Reading and Courtesy Lamp - Left (C3U)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / YE | (1) 2903 | (1) Row 2 Dome Reading Lamp Interior Lamp Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / BN | (4) 2904 | (4) Row 2 Dome Reading Lamp Switch Signal | (4) I | (4) — |

## E37J Roof Rail Rear Seat Position Reading and Courtesy Lamp - Right (C3U)



5493278

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 34791-5140
- Service Connector: 19354840
- Description: 4-Way F Mini 50 Series( BK)

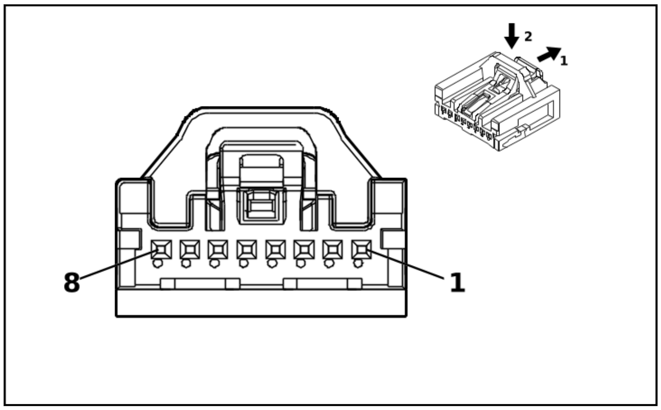
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## E37J Roof Rail Rear Seat Position Reading and Courtesy Lamp - Right (C3U)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BU | (1) 2905 | (1) Row 2 Dome Reading Lamp 2 Interior Lamp Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) VT / GY | (4) 2906 | (4) Row 2 Dome Reading Lamp 2 Switch Signal | (4) I | (4) — |

## E37SMA Rear Seat Position Center Reading and Courtesy Lamp - 2nd Row (- C3U)



5200269

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

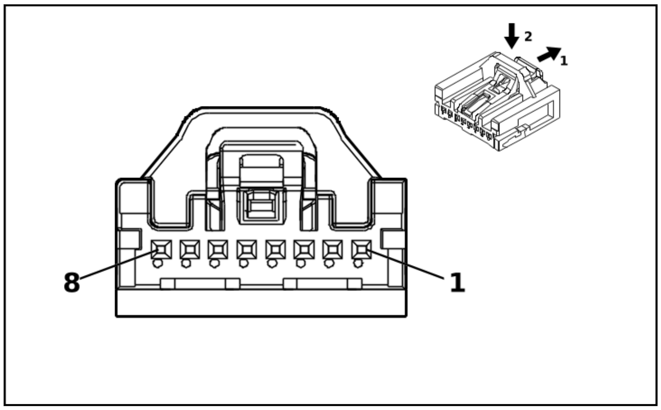
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

### E37SMA Rear Seat Position Center Reading and Courtesy Lamp - 2nd Row (- C3U)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / YE | (1) 2903 | (1) Row 2 Dome Reading Lamp Interior Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / BU | (2) 2905 | (2) Row 2 Dome Reading Lamp 2 Interior Lamp Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / BN | (4) 2904 | (4) Row 2 Dome Reading Lamp Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) VT / GY | (5) 2906 | (5) Row 2 Dome Reading Lamp 2 Switch Signal | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |

### E37SMB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row



5200269

**Connector Part Information**
- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## E37SMB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / WH | (1) 2907 | (1) Row 3 Dome Reading Lamp Interior Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / VT | (2) 2909 | (2) Row 3 Dome Reading Lamp 2 Interior Lamp Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) VT / YE | (4) 2908 | (4) Row 3 Dome Reading Lamp Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE / GY | (5) 2910 | (5) Row 3 Dome Reading Lamp 2 Switch Signal | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |

### E40 Air Heater X1 (C3A)

—

**Connector Part Information**
- Harness Type: AUXHEATER
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way

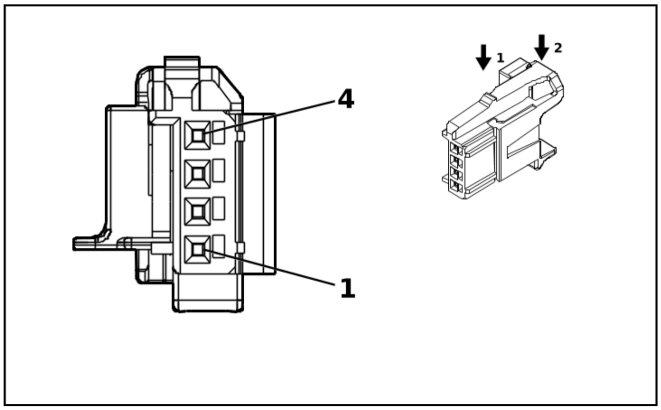
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E40 Air Heater X1 (C3A)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (2) 2 | (2) — | (2) RD / GY | (2) 642 | (2) Battery Positive Voltage | (2) I | (2) — |

### E40 Air Heater X2 (C3A)



5191926

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294399-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

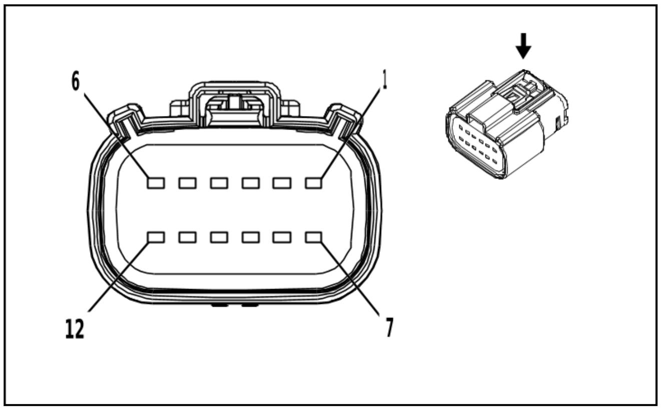
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## E40 Air Heater X2 (C3A)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) — | (2) BN / VT | (2) 239 | (2) Run/Crank Ignition 1 Voltage | (2) I | (2) — |
| (3) 3 | (3) — | (3) BU | (3) 2852 | (3) Body Control Module LIN Bus 6 | (3) I | (3) — |
| (4) 4 | (4) — | (4) BK | (4) 1050 | (4) Ground | (4) I | (4) — |

### E42L Rear Body Structure Stop Lamp - Left



2871867

**Connector Part Information**

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-1260
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( D-GY)

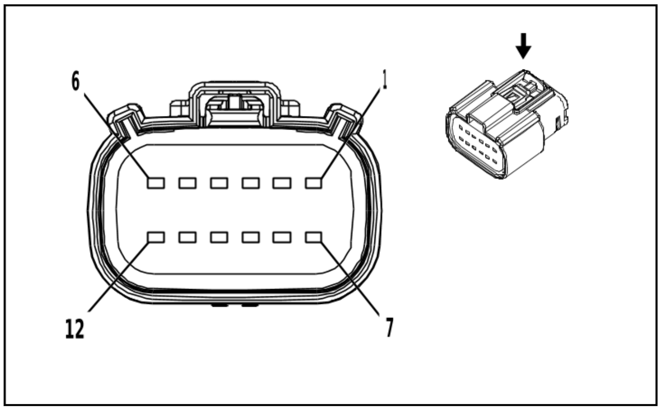
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## E42L Rear Body Structure Stop Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) — | (3) YE / GN | (3) 2024 | (3) Animation Lighting Control | (3) II | (3) TAU |
| (4) 4 | (4) —<br>(4) 0.75 | (4) WH / BK<br>(4) WH / VT | (4) 6567<br>(4) 6567 | (4) Rear Turn Signal Lamp Feedback Signal<br>(4) Rear Turn Signal Lamp Feedback Signal | (4) II<br>(4) I | (4) TAB<br>(4) TAU |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.75 | (6) BK | (6) 2050 | (6) Ground | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) BN / BU | (7) 6993 | (7) Left Rear Park Lamp Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) GN / WH | (8) 24 | (8) Backup Lamp Control | (8) I | (8) — |
| (9) 9 | (9) — | (9) GY / BN | (9) 10749 | (9) Sequential Turn Lamp Enable Signal | (9) II | (9) — |
| (10) 10 | (10) — | (10) BU / WH | (10) 1334 | (10) Left Rear Turn Signal Lamp Control 2 | (10) II | (10) TAU |
| (11) 11 | (11) 0.75<br>(11) — | (11) BU / WH<br>(11) GY / YE | (11) 1334<br>(11) 7542 | (11) Left Rear Turn Signal Lamp Control 2<br>(11) Left Rear Stop Lamp Control | (11) I<br>(11) II | (11) TAB<br>(11) TAU |
| (12) 12 | (12) 0.75 | (12) RD | (12) 11240 | (12) Battery Positive Voltage | (12) I | (12) — |

### E42R Rear Body Structure Stop Lamp - Right



2871867

**Connector Part Information**
- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-1260
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( D-GY)

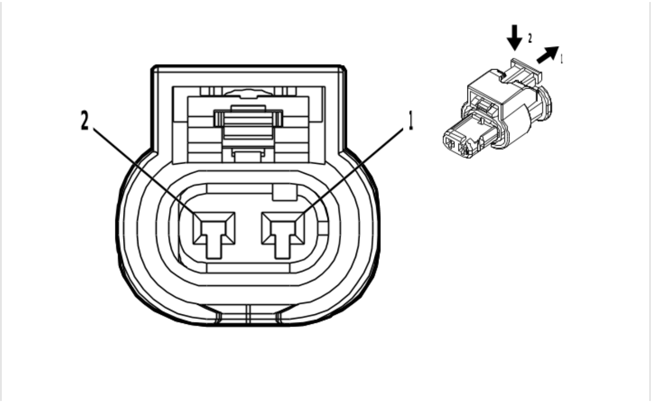
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## E42R Rear Body Structure Stop Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) YE / GN | (3) 2024 | (3) Animation Lighting Control | (3) I | (3) TAU |
| (4) 4 | (4) 0.75<br>(4) — | (4) WH / BK<br>(4) WH / VT | (4) 7544<br>(4) 7544 | (4) Right Rear Turn Signal Lamp Feedback Signal<br>(4) Right Rear Turn Signal Lamp Feedback Signal | (4) I<br>(4) II | (4) TAB<br>(4) TAU |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.75 | (6) BK | (6) 1450 | (6) Ground | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) BN / BU | (7) 6995 | (7) Right Rear Park Lamp Control | (7) I | (7) — |
| (8) 8 | (8) 0.75 | (8) GN / WH | (8) 24 | (8) Backup Lamp Control | (8) I | (8) — |
| (9) 9 | (9) 0.75 | (9) GY / BN | (9) 10749 | (9) Sequential Turn Lamp Enable Signal | (9) I | (9) TAU |
| (10) 10 | (10) 0.75 | (10) BU / WH | (10) 1335 | (10) Right Rear Turn Signal Lamp Control 2 | (10) I | (10) TAU |
| (11) 11 | (11) 0.75<br>(11) — | (11) GY / YE<br>(11) BU / WH | (11) 7541<br>(11) 1335 | (11) Right Rear Stop Lamp Control<br>(11) Right Rear Turn Signal Lamp Control 2 | (11) I<br>(11) II | (11) TAB<br>(11) TAU |
| (12) 12 | (12) 0.75 | (12) RD | (12) 11340 | (12) Battery Positive Voltage | (12) I | (12) TAU |

### E52 Reductant Heater 2 - Injector Supply Pipe



2698576

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 1-1823608-5
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

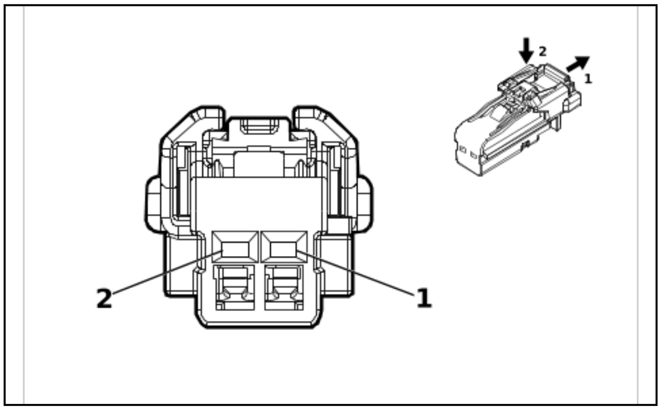
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## E52 Reductant Heater 2 - Injector Supply Pipe

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) WH | (1) 3199 | (1) Diesel Exhaust Fluid Pressure Line Heater Control | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) BN | (2) 4319 | (2) Diesel Exhaust Fluid Line Heater Low Control | (2) I | (2) — |

### E55LF Front Side Door Map Pocket Illumination Lamp - Left



4115691

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

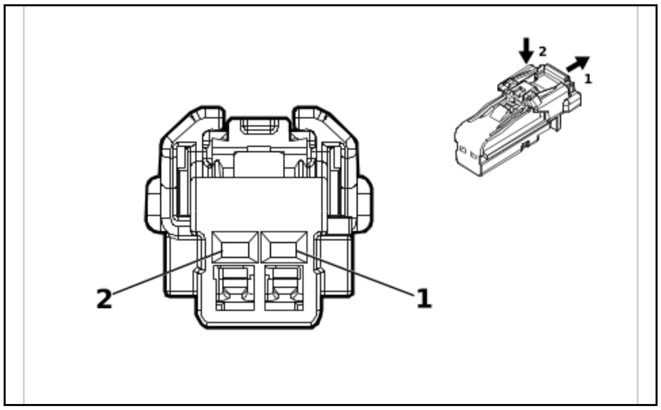
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E55LF Front Side Door Map Pocket Illumination Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / VT | (1) 2767 | (1) LED Ambient Lighting Control Left Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1150 | (2) Ground | (2) I | (2) — |

### E55LR Rear Side Door Pocket Illumination Lamp - Left



4115691

**Connector Part Information**
- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

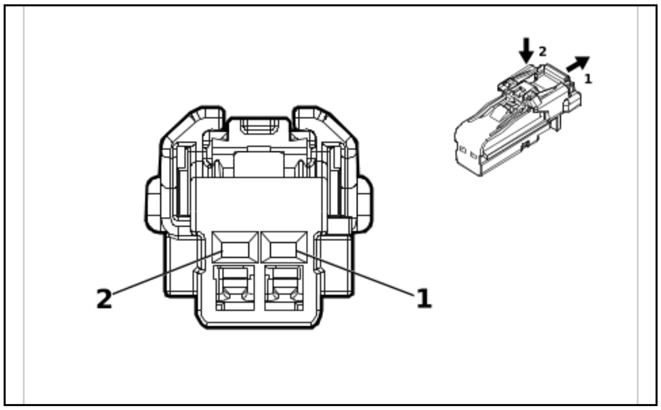
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E55LR Rear Side Door Pocket Illumination Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / YE | (1) 7557 | (1) Interior Door Handle Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1150 | (2) Ground | (2) I | (2) — |

### E55RF Front Side Door Map Pocket Illumination Lamp - Right



4115691

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

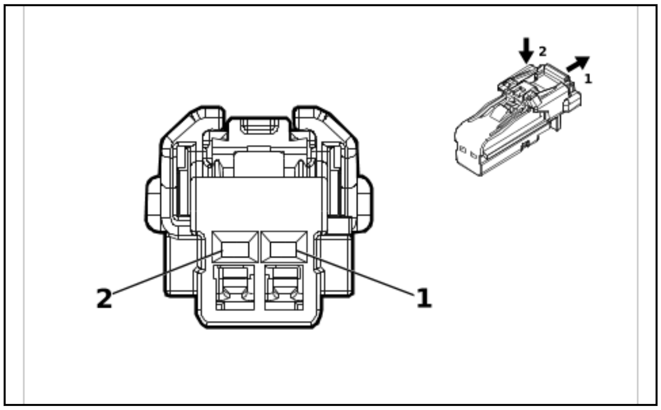
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E55RF Front Side Door Map Pocket Illumination Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BN | (1) 2768 | (1) LED Ambient Lighting Control Right Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### E55RR Rear Side Door Pocket Illumination Lamp - Right



4115691

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

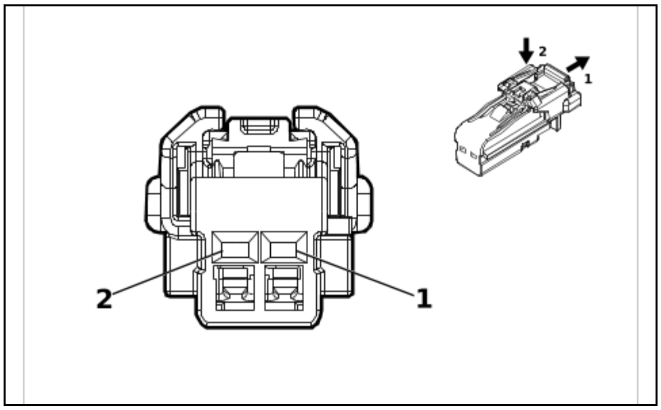
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E55RR Rear Side Door Pocket Illumination Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / YE | (1) 7557 | (1) Interior Door Handle Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### E63D Front Side Door Inside Handle Illumination Lamp - Left



4115691

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

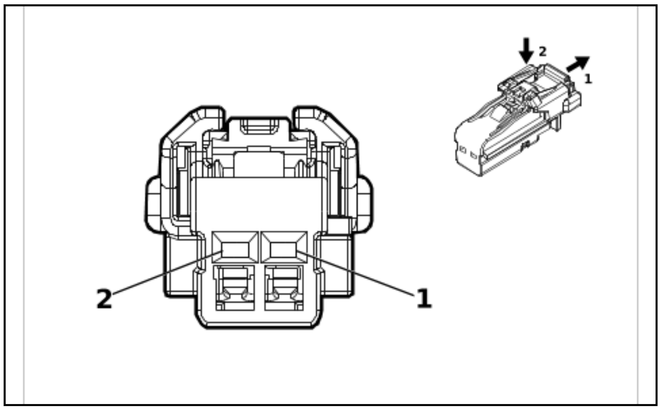
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E63D Front Side Door Inside Handle Illumination Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / VT | (1) 2767 | (1) LED Ambient Lighting Control Left Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1150 | (2) Ground | (2) I | (2) — |

### E63LR Rear Side Door Inside Handle Illumination Lamp - Left



4115691

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

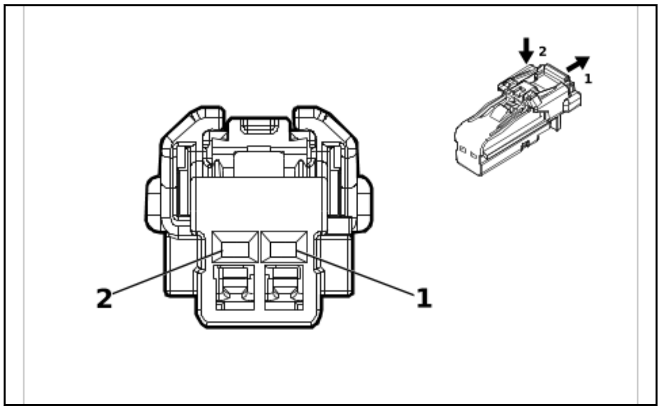
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E63LR Rear Side Door Inside Handle Illumination Lamp - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / YE | (1) 7557 | (1) Interior Door Handle Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1150 | (2) Ground | (2) I | (2) — |

### E63P Front Side Door Inside Handle Illumination Lamp - Right



4115691

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

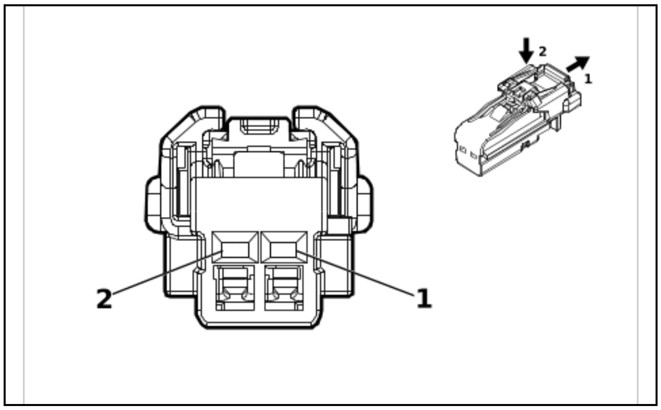
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E63P Front Side Door Inside Handle Illumination Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BN | (1) 2768 | (1) LED Ambient Lighting Control Right Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### E63RR Rear Side Door Inside Handle Illumination Lamp - Right



4115691

**Connector Part Information**
- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

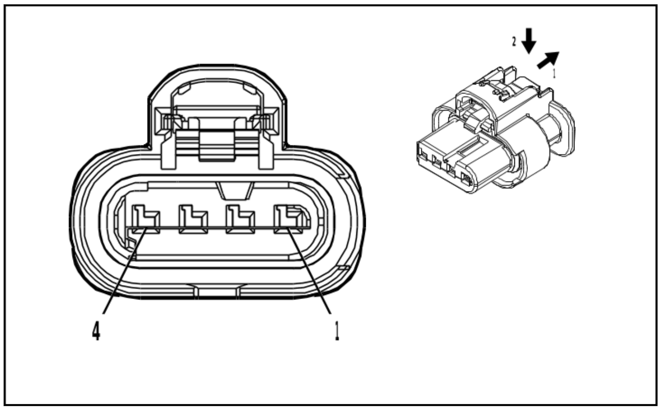
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## E63RR Rear Side Door Inside Handle Illumination Lamp - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / YE | (1) 7557 | (1) Interior Door Handle Accent Lighting Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

## F101 Instrument Panel Airbag



4900699

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2296700-3
- Service Connector: 19371193
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( YE)

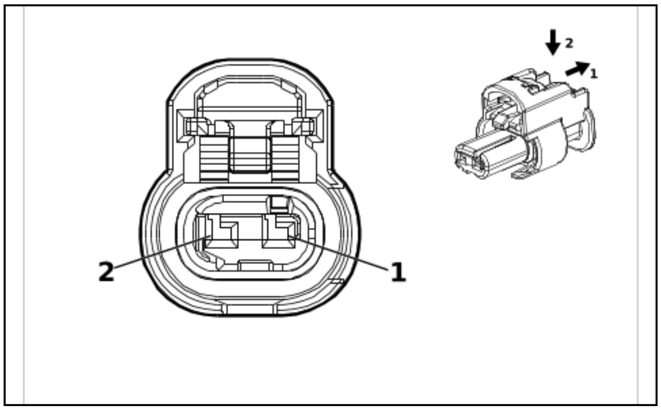
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## F101 Instrument Panel Airbag

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / OG | (1) 3025 | (1) Passenger Instrument Panel Air Bag Stage 1 High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) OG / WH | (2) 3024 | (2) Passenger Instrument Panel Air Bag Stage 1 Low Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / OG | (3) 3027 | (3) Passenger Instrument Panel Air Bag Stage 2 High Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) OG / VT | (4) 3026 | (4) Passenger Instrument Panel Air Bag Stage 2 Low Control | (4) I | (4) — |

### F105LA Front and Rear and 3rd Row Roof Rail Airbag - Left



4036662

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 2296698-1
- Service Connector: 19369032
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( YE)

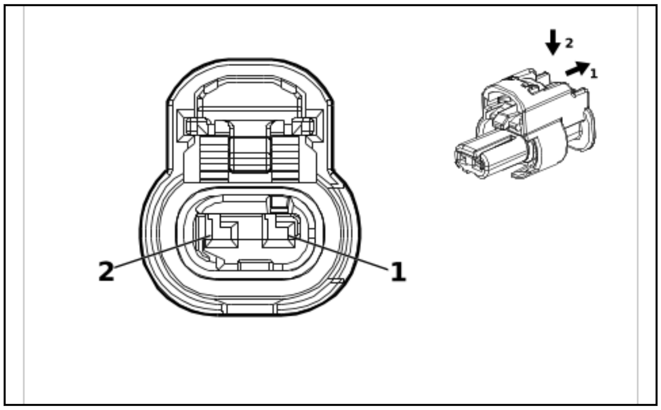
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## F105LA Front and Rear and 3rd Row Roof Rail Airbag - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 5019 | (1) Left Front Roof Rail Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 5020 | (2) Left Front Roof Rail Air Bag Low Control | (2) I | (2) — |

### F105RA Front and Rear and 3rd Row Roof Rail Airbag - Right



4036662

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 2296698-1
- Service Connector: 19369032
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( YE)

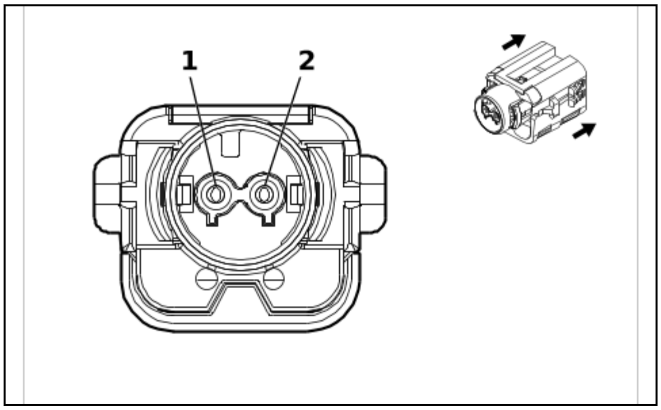
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## F105RA Front and Rear and 3rd Row Roof Rail Airbag - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GY | (1) 5021 | (1) Right Front Roof Rail Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / OG | (2) 5022 | (2) Right Front Roof Rail Air Bag Low Control | (2) I | (2) — |

### F106D Front Seat Outboard Seat Back Airbag - Driver



5499727

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35212936
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

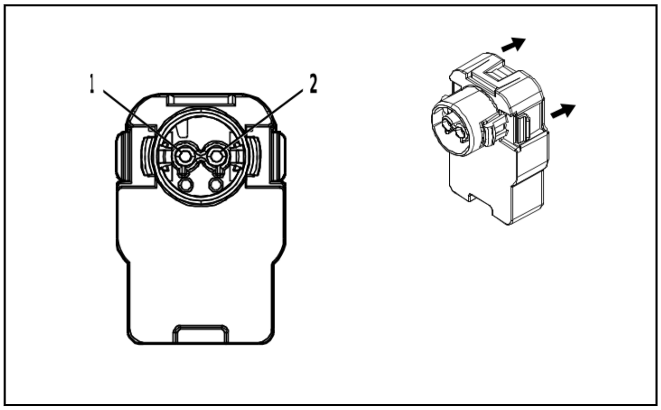
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F106D Front Seat Outboard Seat Back Airbag - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BU | (1) 4962 | (1) Driver Seat Back Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / OG | (2) 4963 | (2) Driver Seat Back Air Bag Low Control | (2) I | (2) — |

### F106DA Front Seat Inboard Seat Back Airbag - Driver



4823720

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 1-1802365-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( GY with YE Cover)

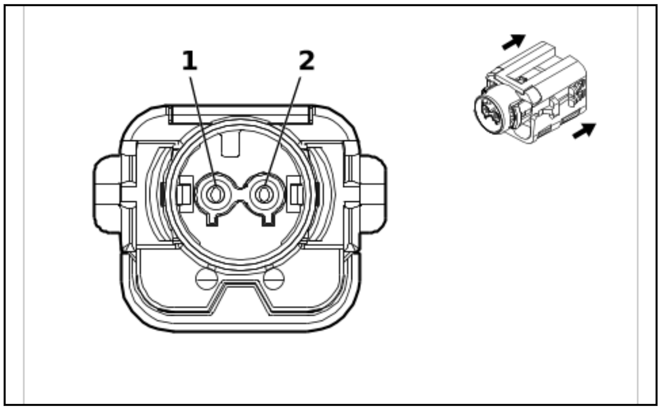
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F106DA Front Seat Inboard Seat Back Airbag - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BN | (1) 4207 | (1) Driver Inboard Seat Side Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / OG | (2) 4208 | (2) Driver Inboard Seat Side Air Bag Low Control | (2) I | (2) — |

### F106P Front Seat Outboard Seat Back Airbag - Passenger



5499727

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35212936
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

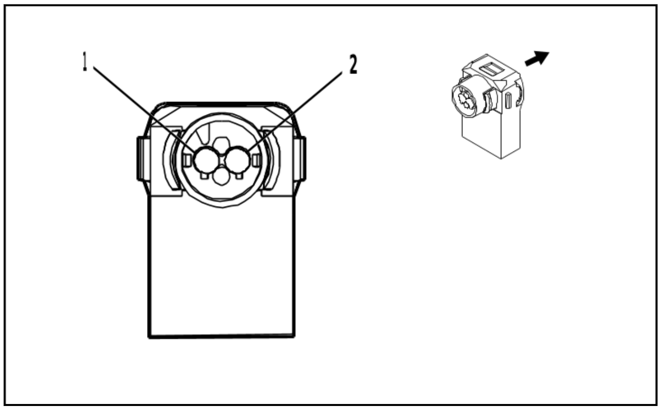
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F106P Front Seat Outboard Seat Back Airbag - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GY | (1) 4956 | (1) Passenger Seat Back Air Bag High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / OG | (2) 4957 | (2) Passenger Seat Back Air Bag Low Control | (2) I | (2) — |

### F107 Steering Wheel Airbag



4679778

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 35504154
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ABX-5 Series( GY with YE Cover)

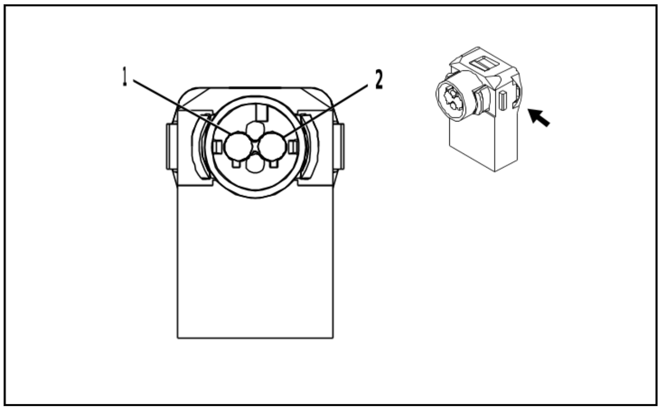
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## F107 Steering Wheel Airbag

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / VT | (1) 3021 | (1) Steering Wheel Air Bag Stage 1 High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / OG | (2) 3020 | (2) Steering Wheel Air Bag Stage 1 Low Control | (2) I | (2) — |

### F112D Front Seat Belt Retractor - Driver



4241364

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35504153
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series( PU with YE Cover)

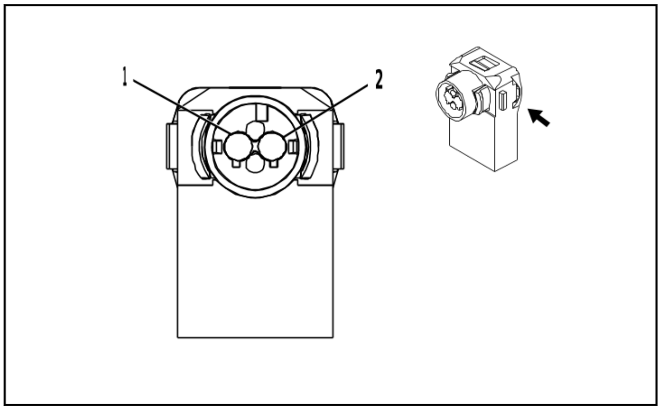
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F112D Front Seat Belt Retractor - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / WH | (1) 3477 | (1) Driver Seat Belt Retractor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 3478 | (2) Driver Seat Belt Retractor Pretensioner Low Control | (2) I | (2) — |

### F112P Front Seat Belt Retractor - Passenger



4241364

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35504153
- Service Connector: 85666123
- Description: 2-Way F ABX-5 Series( PU with YE Cover)

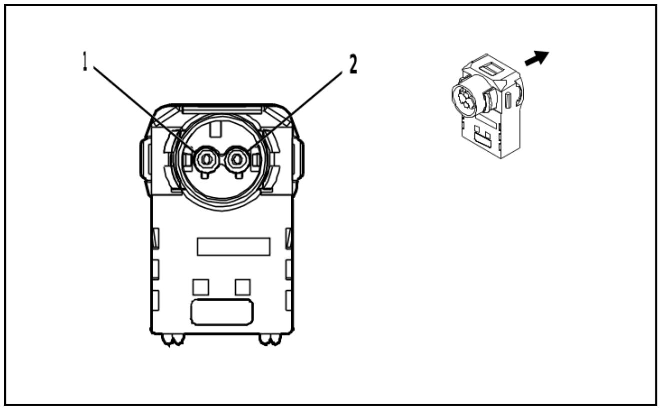
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F112P Front Seat Belt Retractor - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / GN | (1) 3475 | (1) Passenger Seat Belt Retractor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / OG | (2) 3476 | (2) Passenger Seat Belt Retractor Pretensioner Low Control | (2) I | (2) — |

### F113D Front Seat Belt Anchor Plate Tensioner - Driver



4231869

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35504152
- Service Connector: 85666122
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

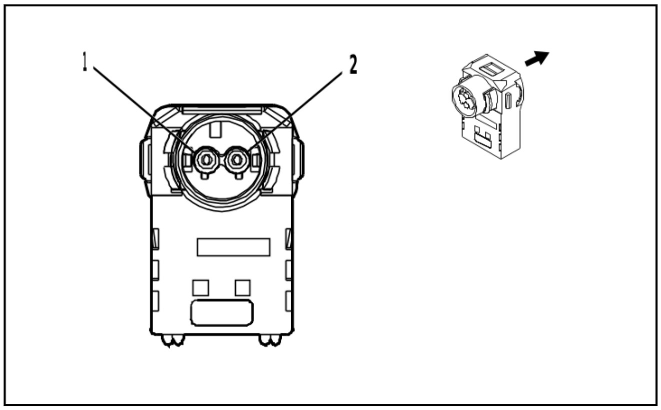
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F113D Front Seat Belt Anchor Plate Tensioner - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / YE | (1) 3481 | (1) Driver Seat Belt Anchor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / OG | (2) 3482 | (2) Driver Seat Belt Anchor Pretensioner Low Control | (2) I | (2) — |

### F113P Front Seat Belt Anchor Plate Tensioner - Passenger



4231869

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35504152
- Service Connector: 85666122
- Description: 2-Way F ABX-5 Series( PK with YE Cover)

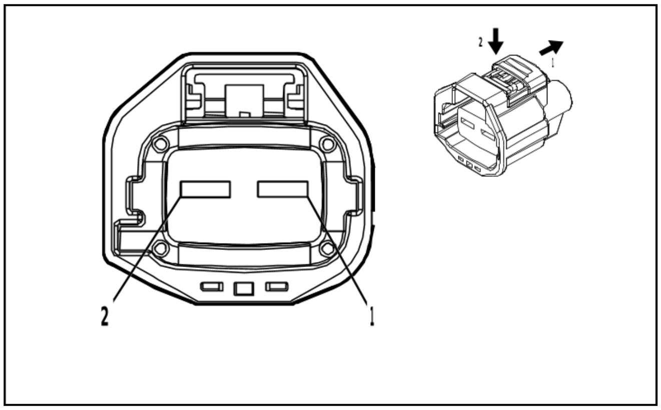
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-10 (GN) | No Tool Required |

## F113P Front Seat Belt Anchor Plate Tensioner - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) OG / BN | (1) 3479 | (1) Passenger Seat Belt Anchor Pretensioner High Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / OG | (2) 3480 | (2) Passenger Seat Belt Anchor Pretensioner Low Control | (2) I | (2) — |

### G4 Automatic Level Control Air Compressor (F47)



4584202

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7287-6196-10
- Service Connector: 19368222
- Description: 2-Way F 6.3 Series, Sealed( D-GY)

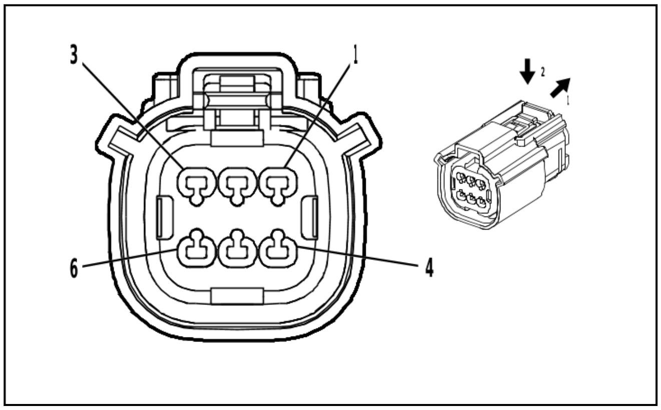
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## G4 Automatic Level Control Air Compressor (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GN / BN | (1) 2357 | (1) Vehicle Level Control Compressor Motor Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) GY / BN | (2) 2693 | (2) Leveling Compressor Motor Low Reference | (2) I | (2) — |

### G5 Automatic Transmission Auxiliary Fluid Pump



4574736

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 160038-3009
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed( WH)

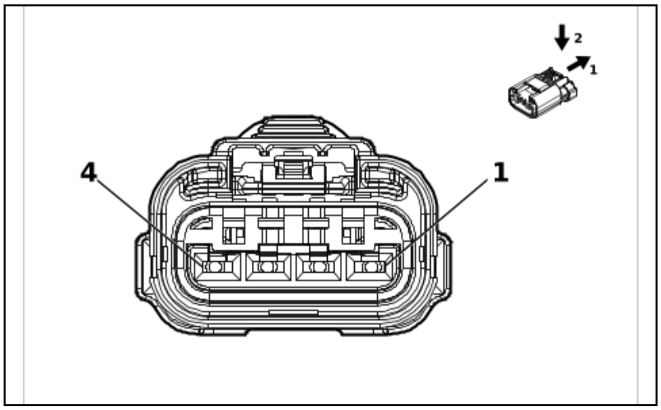
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## G5 Automatic Transmission Auxiliary Fluid Pump

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / VT | (1) 8640 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BN | (3) 6387 | (3) Transmission High Side Driver 1 Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / OG | (4) 2968 | (4) Transmission Auxiliary Fluid Pump Control | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 1.5 | (6) BK / YE | (6) 6550 | (6) Ground | (6) I | (6) — |

## G10L Cooling Fan Motor - Left



5838592

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 85563415
- Description: 4-Way F 2.8 APEX Series, Sealed( BK)

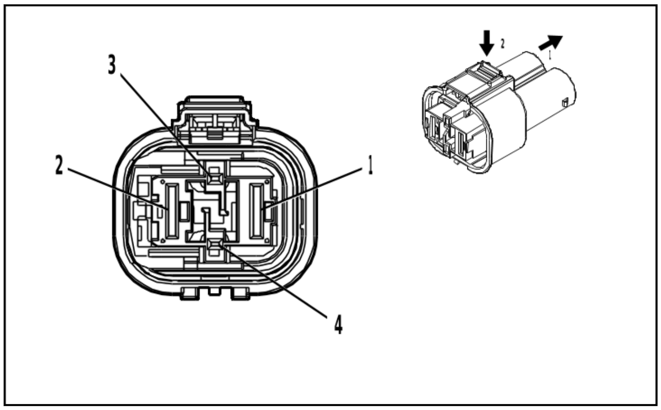
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |

### G10L Cooling Fan Motor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) BK | (1) 450 | (1) Ground | (1) III | (1) — |
| (2) 2 | (2) 5 | (2) RD / BU | (2) 1842 | (2) Battery Positive Voltage | (2) III | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75<br>(4) 0.75 | (4) GN / VT<br>(4) GN / VT | (4) 4621<br>(4) 4621 | (4) Engine Control Module LIN Bus 1<br>(4) Engine Control Module LIN Bus 1 | (4) I<br>(4) II | (4) L84 OR L87<br>(4) LZ0 |

### G10LW Cooling Fan Motor - Lower (LZ0)



4847569

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 4-2286732-1
- Service Connector: 84766431
- Description: 4-Way F 1.2, 9.5 MCON Series, Sealed( BK)

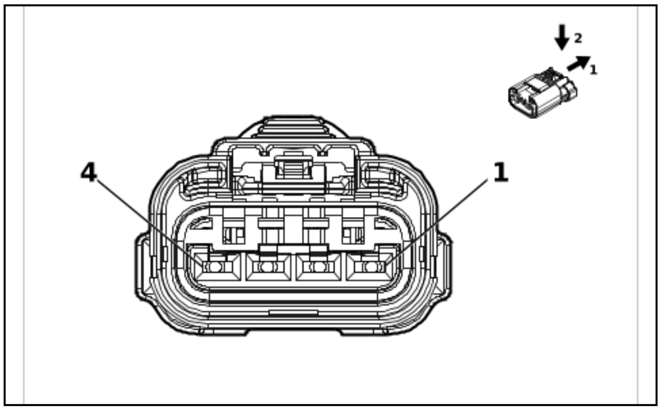
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-22 (RD) | No Tool Required |

## G10LW Cooling Fan Motor - Lower (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) RD / BU | (1) 1542 | (1) Battery Positive Voltage | (1) II | (1) — |
| (2) 2 | (2) 5 | (2) BK | (2) 450 | (2) Ground | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / YE | (3) 4623 | (3) Engine Control Module LIN Bus 3 | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## G10R Cooling Fan Motor - Right (L84 / L87)



5838592

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35243535
- Service Connector: 85563415
- Description: 4-Way F 2.8 APEX Series, Sealed( BK)

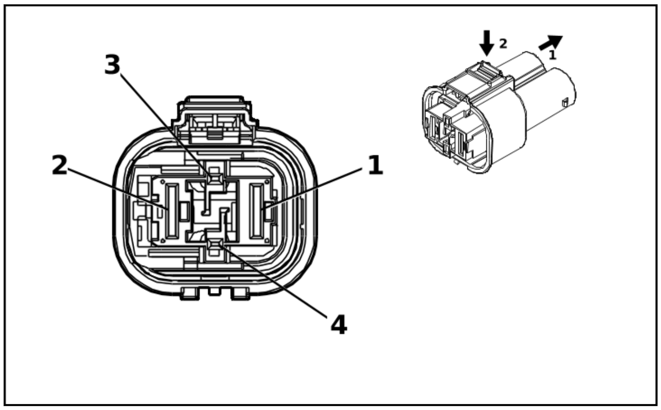
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

### G10R Cooling Fan Motor - Right (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) BK | (1) 450 | (1) Ground | (1) II | (1) — |
| (2) 2 | (2) 5 | (2) RD / BN | (2) 1742 | (2) Battery Positive Voltage | (2) II | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.75 | (4) GN / VT | (4) 4621 | (4) Engine Control Module LIN Bus 1 | (4) I | (4) — |

## G10R Cooling Fan Motor - Right (LZ0)



5187743

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 4-2286732-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2, 9.5 MCON Series( GY)

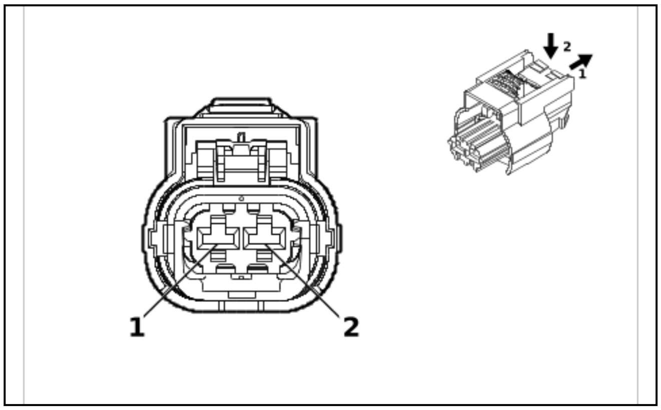
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-22 (RD) | No Tool Required |

### G10R Cooling Fan Motor - Right (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 10 | (1) RD / YE | (1) 1442 | (1) Battery Positive Voltage | (1) II | (1) — |
| (2) 2 | (2) 8 | (2) BK | (2) 450 | (2) Ground | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / VT | (3) 4621 | (3) Engine Control Module LIN Bus 1 | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## G13 Generator X1



4992524

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

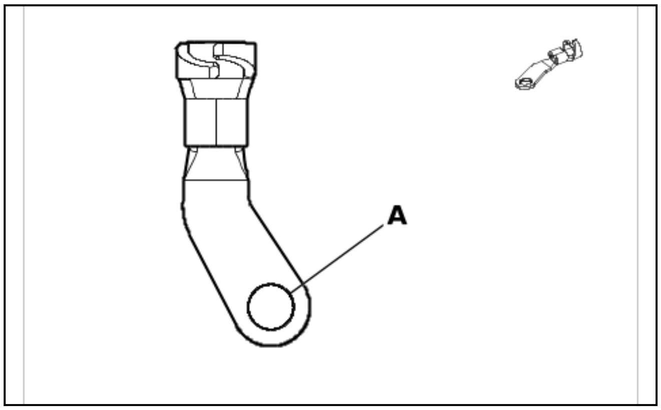
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

### G13 Generator X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) BN<br>(1) BN | (1) 25<br>(1) 25 | (1) Charge Indicator Control<br>(1) Charge Indicator Control | (1) I<br>(1) II | (1) L84 OR L87<br>(1) LZ0 |
| (2) 2 | (2) 0.5<br>(2) 0.5 | (2) GY<br>(2) GY | (2) 23<br>(2) 23 | (2) Generator Field Duty Cycle Signal<br>(2) Generator Field Duty Cycle Signal | (2) I<br>(2) II | (2) L84 OR L87<br>(2) LZ0 |

### G13 Generator X2 (L84 / L87)



5911279

**Connector Part Information**
- Harness Type: Starter Solenoid Cable
- OEM Connector: 84238913
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

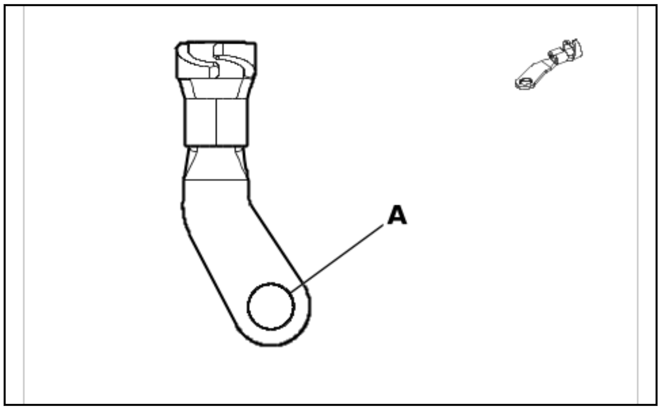
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## G13 Generator X2 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | L84/ L87 |

### G13 Generator X2 (LZ0)



5911279

**Connector Part Information**
- Harness Type: Generator Battery Jumper Cable
- OEM Connector: 84238913
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

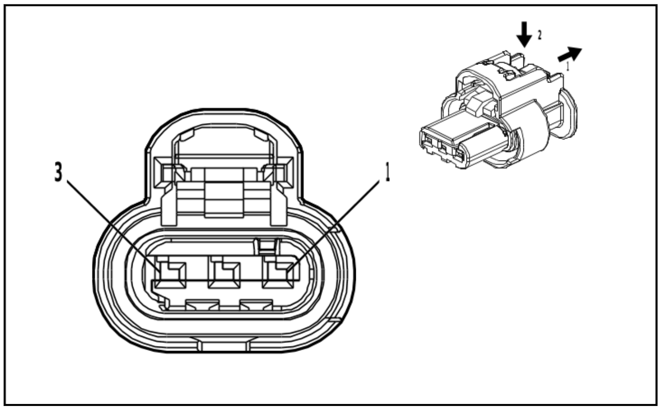
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## G13 Generator X2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / GN | 242 | Battery Positive Voltage | I | LZ0 |

### G17 Heater Coolant Pump



4581126

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296695-1
- Service Connector: 86792094
- Description: 3-Way F 1.2 MCON-CB Series, Sealed( BK)

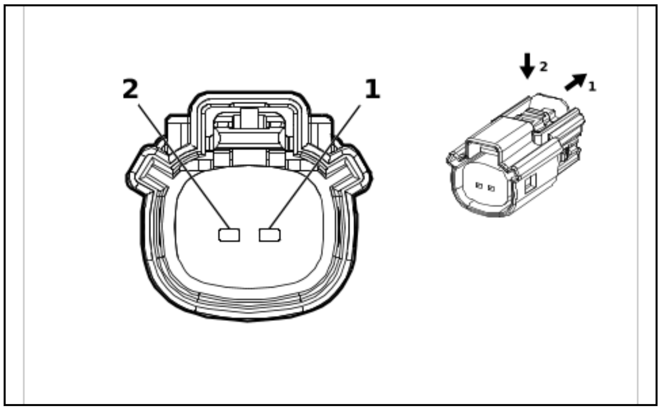
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## G17 Heater Coolant Pump

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6550 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / BN | (2) 5940 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / VT | (3) 4621 | (3) Engine Control Module LIN Bus 1 | (3) I | (3) — |

### G18 Fuel Pump - High Pressure



2474713

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 33471-0206
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

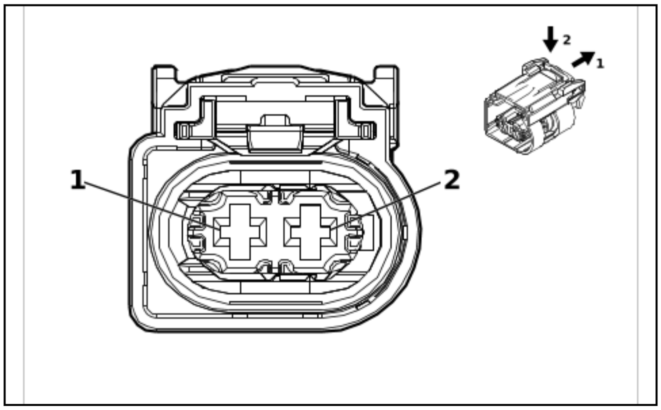
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## G18 Fuel Pump - High Pressure

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / BK | (1) 7300 | (1) High Pressure Fuel Pump Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 7301 | (2) High Pressure Fuel Pump High Control | (2) I | (2) — |

### G24 Windshield Washer Pump



5580410

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 2425741-1
- Service Connector: 85005016
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

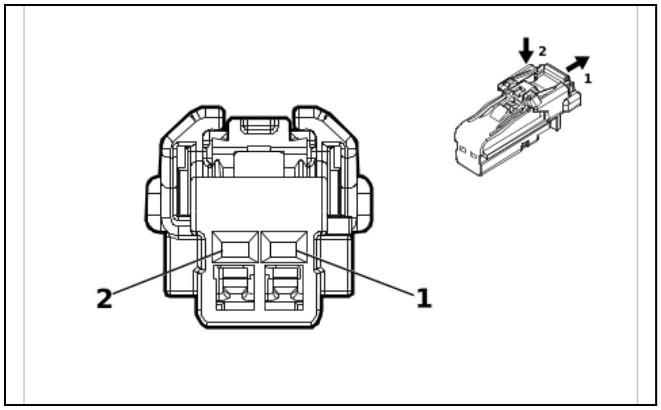
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## G24 Windshield Washer Pump

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / VT | (1) 392 | (1) Rear Window Washer Pump Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / VT | (2) 228 | (2) Windshield Washer Pump Control | (2) I | (2) — |

### G31D Front Seat Back Lumbar Pump - Driver (AVK)



4115691

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

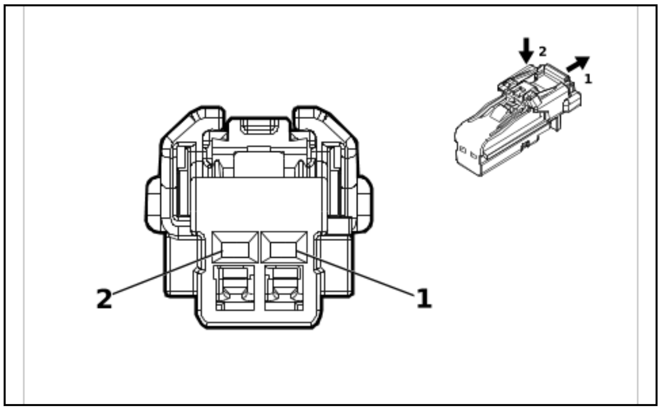
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## G31D Front Seat Back Lumbar Pump - Driver (AVK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BU | (1) 4891 | (1) Driver Seat Lumbar/Bolster Pump Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / BK | (2) 2305 | (2) Driver Seat Bolster Pump Low Reference | (2) I | (2) — |

### G31P Front Seat Back Lumbar Pump - Passenger



4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

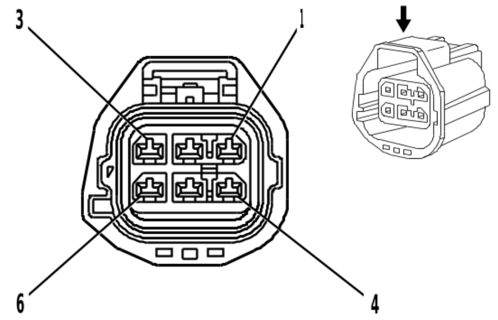
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## G31P Front Seat Back Lumbar Pump - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / WH | (1) 4890 | (1) Passenger Seat Lumbar/Bolster Pump Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |

### K4 Running Board Control Module X1 (B3L)



1420587

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7287-9814-10
- Service Connector: 19368306
- Description: 6-Way F 2.8 Series, Sealed( GY)

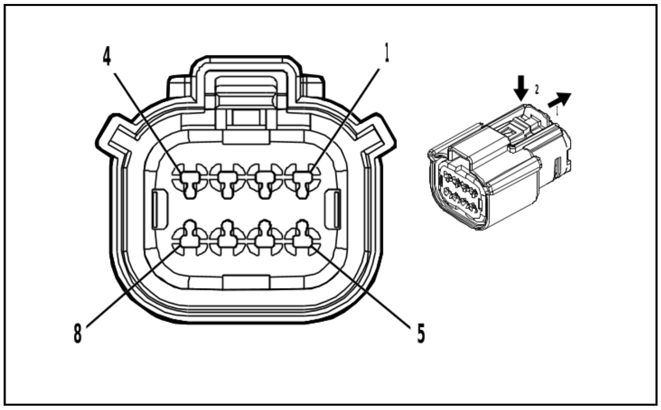
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## K4 Running Board Control Module X1 (B3L)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / YE | (1) 1142 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) GY | (2) 7472 | (2) Left Running Board Step Motor Control Retract | (2) I | (2) — |
| (3) 3 | (3) 2 | (3) BU | (3) 7470 | (3) Right Running Board Step Motor Control Extend | (3) I | (3) — |
| (4) 4 | (4) 2.5 | (4) BK | (4) 1650 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 2 | (5) WH / BN | (5) 7471 | (5) Left Running Board Step Motor Control Extend | (5) I | (5) — |
| (6) 6 | (6) 2 | (6) GN | (6) 7469 | (6) Right Left Running Board Step Motor Control Retract | (6) I | (6) — |

### K4 Running Board Control Module X2 (B3L)



4846407

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-4846
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

## Terminal Part Information

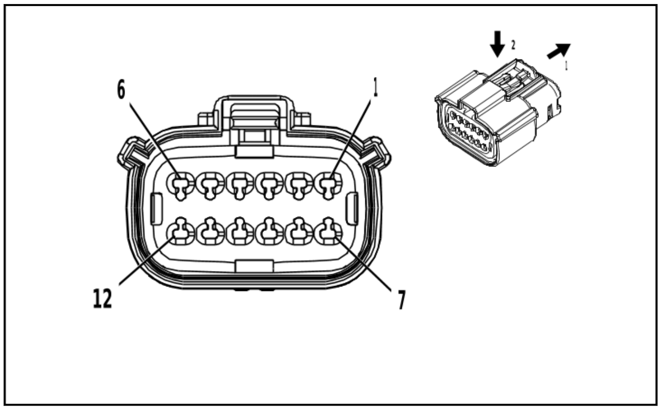
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## K4 Running Board Control Module X2 (B3L)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) WH / VT | (2) 4986 | (2) AUTOSAR CAN Bus [-] 1 Serial Data | (2) I | (2) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 4987 | (3) AUTOSAR CAN Bus [+] 1 Serial Data | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) AUTOSAR CAN Bus [+] 1 Serial Data | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

**K4 Running Board Control Module X3 (B3L)**



2871860

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 33472-6223
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

## Terminal Part Information

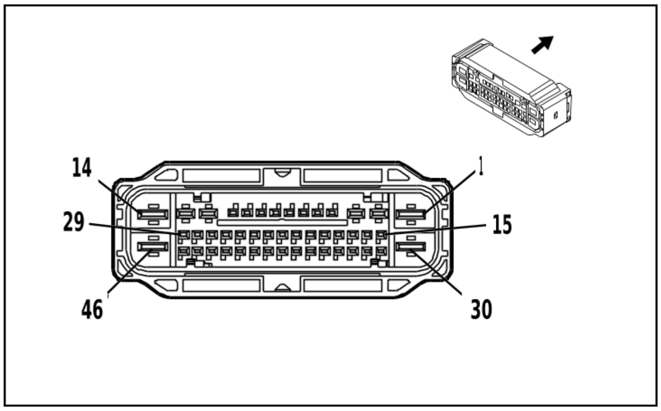
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |

## K4 Running Board Control Module X3 (B3L)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / RD | (1) 7464 | (1) Right Running Board Step Motor Hall Sensor 5V Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 7465 | (2) Right Running Board Step Motor Hall Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BK | (3) 7463 | (3) Right Running Board Step Motor Hall Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN | (4) 4748 | (4) Left Running Board Step Courtesy Lamp Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / VT | (5) 4749 | (5) Right Running Board Step Courtesy Lamp Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) VT / RD | (7) 7468 | (7) Left Running Board Step Motor Hall Sensor 5V Reference | (7) I | (7) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.5 | (8) YE | (8) 7467 | (8) Left Running Board Step Motor Hall Sensor Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) YE / BN | (9) 7466 | (9) Left Running Board Step Motor Hall Sensor Low Reference | (9) I | (9) — |
| 10 - 12 | — | — | — | Not Occupied | — | — |

### K5 Automatic Level Control Module (F47)



4162046

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35780379
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

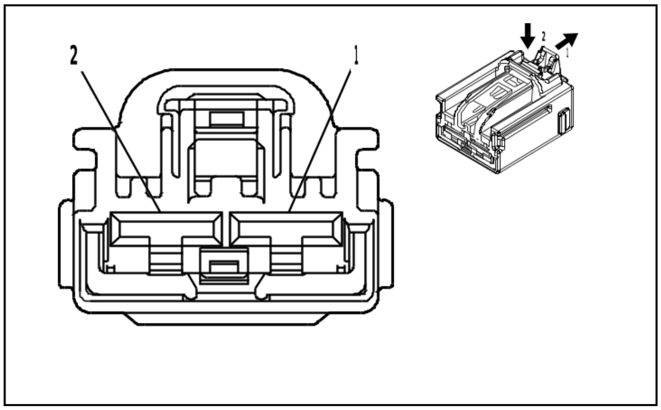
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575368 | J-35616-35 (VT) | J-38125-556 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |

## K5 Automatic Level Control Module (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) RD / BU | (1) 7640 | (1) Battery Positive Voltage | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / BN | (2) 2940 | (2) Battery Positive Voltage | (2) I | (2) — |
| 3 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) WH / GN | (7) 320 | (7) Vehicle Level Control Exhaust Solenoid Valve Control | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) WH / BU | (9) 3261 | (9) Vehicle Level Control Exhaust Solenoid Valve Control | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) BU / BK | (10) 4977 | (10) AUTOSAR CAN Bus [+] 3 Serial Data | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) WH | (11) 4976 | (11) AUTOSAR CAN Bus [-] 3 Serial Data | (11) II | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.75 | (13) BK | (13) 2150 | (13) Ground | (13) I | (13) — |
| (14) 14 | (14) 3 | (14) BK | (14) 2150 | (14) Ground | (14) III | (14) — |
| 15 - 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) BK / BU | (18) 1206 | (18) Left Front Suspension Position Sensor Low Reference | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) BN / WH | (19) 1207 | (19) Left Front Suspension Position Sensor Signal | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) BU / RD | (20) 1205 | (20) Left Front Suspension Position Sensor Voltage Reference | (20) II | (20) — |
| (21) 21 | (21) 0.5 | (21) YE / RD | (21) 1208 | (21) Left Rear Suspension Position Sensor Voltage Reference | (21) II | (21) — |
| (22) 22 | (22) 0.5 | (22) GN / WH | (22) 1210 | (22) Left Rear Suspension Position Sensor Signal | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) BK / GN | (23) 1209 | (23) Left Rear Suspension Position Sensor Low Reference | (23) II | (23) — |
| (24) 24 | (24) 0.5 | (24) BU / BK | (24) 4977 | (24) AUTOSAR CAN Bus [+] 3 Serial Data | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) WH | (25) 4976 | (25) AUTOSAR CAN Bus [-] 3 Serial Data | (25) II | (25) — |
| 26 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 2.5 | (30) GN / BN | (30) 2357 | (30) Vehicle Level Control Compressor Motor Control | (30) III | (30) — |
| 31 - 33 | — | — | — | Not Occupied | — | — |
| (34) 34 | (34) 0.5 | (34) BK / GY | (34) 1212 | (34) Right Front Suspension Position Sensor Low Reference | (34) II | (34) — |
| (35) 35 | (35) 0.5 | (35) YE / WH | (35) 1213 | (35) Right Front Suspension Position Sensor Signal | (35) II | (35) — |
| (36) 36 | (36) 0.5 | (36) BN / RD | (36) 1211 | (36) Right Front Suspension Position Sensor Voltage Reference | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) GN / RD | (37) 1214 | (37) Right Rear Suspension Position Sensor Voltage Reference | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) GN / GY | (38) 1216 | (38) Right Rear Suspension Position Sensor Signal | (38) II | (38) — |
| (39) 39 | (39) 0.5 | (39) BK / YE | (39) 1215 | (39) Right Rear Suspension Position Sensor Low Reference | (39) II | (39) — |
| 40 - 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 2.5 | (46) GY / BN | (46) 2693 | (46) Leveling Compressor Motor Low Reference | (46) III | (46) — |

### K8AB Blower Motor Control Module - Rear X1



5116029

**Connector Part Information**

- Harness Type: Rear Blower Motor
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

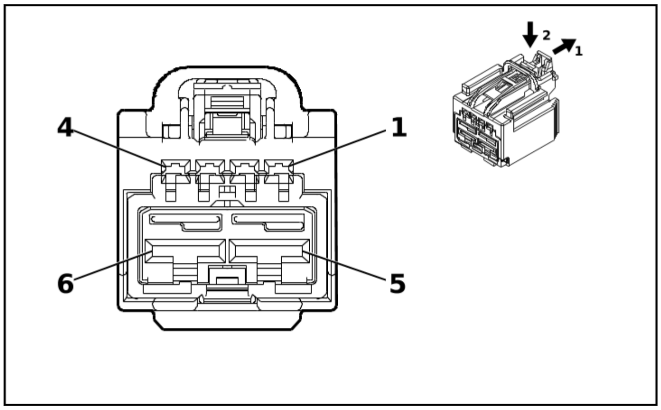
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K8AB Blower Motor Control Module - Rear X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BN | (1) 101 | (1) Blower Motor Control 2 | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) BU / BK | (2) 5988 | (2) Rear Blower Motor Control | (2) I | (2) — |

### K8AB Blower Motor Control Module - Rear X2



5355899

**Connector Part Information**

- Harness Type: Auxiliary Heater and Air Conditioning Wiring Harness
- OEM Connector: 7289-9870-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5, 6.3 YESC Series( BK)

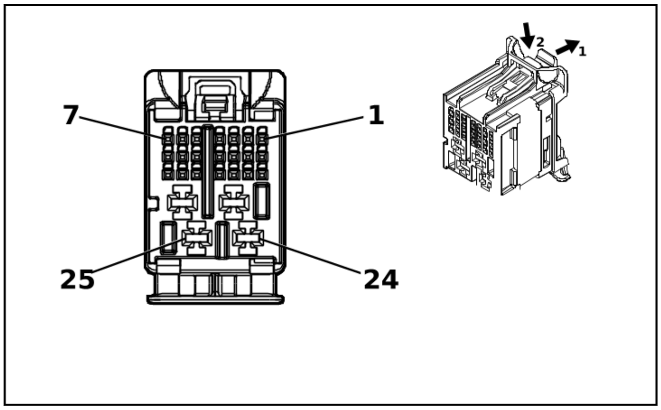
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-42 (RD) | No Tool Required |

## K8AB Blower Motor Control Module - Rear X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BN | (3) 2211 | (3) Rear Blower Motor Speed Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 3 | (5) BK | (5) 1450 | (5) Ground | (5) II | (5) — |
| (6) 6 | (6) 3 | (6) RD / YE | (6) 1740 | (6) Battery Positive Voltage | (6) II | (6) — |

### K9 Body Control Module X1



5203995

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0013
- Service Connector: 13534967
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( BK with GY Inner Connector)

## Terminal Part Information

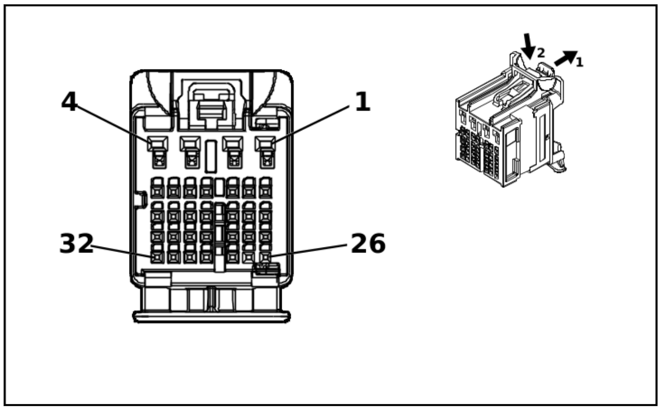
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |
| III | Not required | No Tool Required | No Tool Required |

## K9 Body Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BK | (1) 4782 | (1) Instrument Panel Accent Lighting Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.35 | (3) GY / YE | (3) 7543 | (3) Hazard Warning Indicator LED Dimming Signal | (3) I | (3) — |
| (4) 4 | (4) — | (4) VT | (4) 7558 | (4) Front Footwell Accent Lighting Control | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / GY | (5) 754 | (5) Blower Motor Speed Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / YE | (6) 4634 | (6) HVAC Remote Enable Signal | (6) I | (6) — |
| 7 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) GY / GN | (11) 4636 | (11) HVAC System Enable Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 728 | (12) Security Indicator Control | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) YE | (13) 6812 | (13) Out of Park Signal | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) GY | (15) 590 | (15) Driver Solar Sensor Signal | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GY | (16) 6137 | (16) Air Conditioning Evaporator Temperature Sensor Signal | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) WH / BU | (17) 278 | (17) Ambient Light Sensor Signal | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / WH | (18) 734 | (18) Inside Air Temperature Sensor Signal | (18) I | (18) — |
| 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.35 | (20) GN / VT | (20) 2852 | (20) Body Control Module LIN Bus 6 | (20) I | (20) — |
| 21 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 1 | (23) RD / GY | (23) 2840 | (23) Battery Positive Voltage | (23) II | (23) — |
| 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.75 | (25) RD / GY | (25) 2140 | (25) Battery Positive Voltage | (25) II | (25) — |

### K9 Body Control Module X2



5204222

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0015
- Service Connector: 13534980
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( PK with GY Inner Connector)

## Terminal Part Information

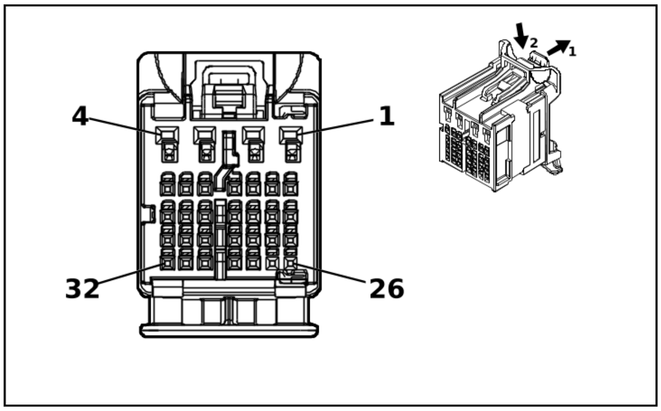
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY | (1) 157 | (1) Interior Lamp Control | (1) II | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BU / GN | (5) 5723 | (5) Ignition Mode Switch Mode Voltage | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) VT / YE | (9) 5526 | (9) Tap Up/Tap Down Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) WH / BN | (10) 2203 | (10) Enhanced Driver Mode 2 Switch Signal | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.35 | (12) YE / BU | (12) 1714 | (12) Windshield Wiper Switch Low Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BN / GN | (13) 11875 | (13) Cruise Control Bank 2 Switch Signal | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) GY / GN | (14) 11874 | (14) Cruise Control Bank 1 Switch Signal | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) BN / BK | (16) 5720 | (16) Ignition Mode Switch Accessory LED Signal | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) WH / VT | (19) 103 | (19) Headlamp Switch On Signal | (19) I | (19) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (20) 20 | (20) 0.35 | (20) GN / GY | (20) 13 | (20) Headlamp Switch Park Lamp Signal | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) GN / BN | (21) 306 | (21) Headlamp Switch Off Signal | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) GY / BU | (22) 3602 | (22) Curb View Enable Signal | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) VT / BU | (23) 2916 | (23) Right Turn Signal Switch Signal | (23) I | (23) — |
| 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.35 | (25) BK / GY | (25) 6009 | (25) Windshield Wiper Switch Low Reference | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) WH / BK | (26) 94 | (26) Windshield Washer Switch Signal | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) YE / BN | (27) 307 | (27) Headlamp Switch Flash Signal | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) GN / WH | (28) 3287 | (28) Horn Switch Signal | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) WH / GN | (29) 2915 | (29) Left Turn Signal Switch Signal | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) BK / YE | (30) 407 | (30) Sensor Low Reference | (30) I | (30) — |
| (31) 31 | (31) 0.35 | (31) GN / WH | (31) 111 | (31) Hazard Warning Switch Signal | (31) I | (31) — |
| (32) 32 | (32) 0.35 | (32) WH | (32) 524 | (32) High Beam Select Switch High Beam Signal | (32) I | (32) — |

### K9 Body Control Module X3



5203925

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160028-0012
- Service Connector: 13534977
- Description: 32-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BU with GY Inner Connector)

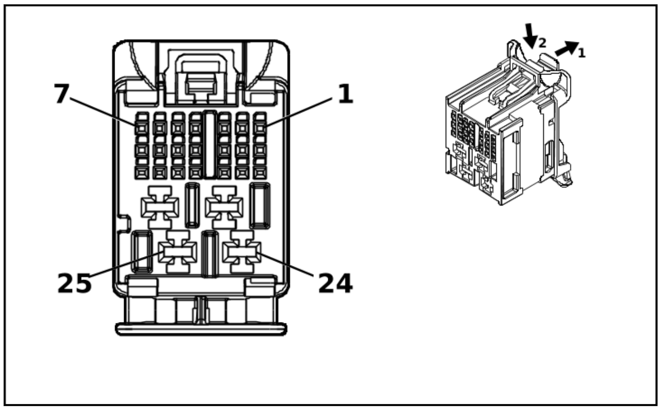
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) BN / BU | (2) 4892 | (2) Auxiliary Battery Relay Control | (2) II | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GN / BN | (5) 2853 | (5) Body Control Module LIN Bus 7 | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / BU | (6) 391 | (6) Rear Window Wiper Switch Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / BN | (7) 7555 | (7) Headlamp Switch Signal | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) GN / BK | (10) 2858 | (10) Body Control Module LIN Bus 12 | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) WH | (13) 3152 | (13) Lane Departure Warning Indicator Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) GN / BN | (14) 5852 | (14) Rear Parking Assist Disable LED Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GN | (15) 1110 | (15) Stop/Start Indicator Control | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GN / BU | (16) 761 | (16) Blower Speed Feedback Signal | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) YE | (18) 7556 | (18) Headlamp Switch Reference | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) BU / BK | (19) 5719 | (19) Ignition Mode Switch Start LED Signal | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / VT | (20) 6821 | (20) Surveillance Switch Signal | (20) I | (20) — |
| 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.35 | (22) BN / GY | (22) 8021 | (22) Police Microphone Enable Signal | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) BU | (23) 1111 | (23) Stop/Start Switch Signal | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) WH / BU | (24) 3691 | (24) Trailer Brake Apply Signal | (24) I | (24) — |
| 25 - 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.35 | (27) GY / WH | (27) 3153 | (27) Lane Departure Warning Disable Switch Signal | (27) I | (27) — |
| 28 | — | — | — | Not Occupied | — | — |
| (29) 29 | (29) 0.35 | (29) GY / VT | (29) 8022 | (29) Police Roof Lamp Control | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) BU / YE | (30) 6844 | (30) ABS/Traction Control Hill Descent Control Switch Signal | (30) I | (30) — |
| (31) 31 | (31) 0.35 | (31) GY / GN | (31) 2555 | (31) Rear Parking Assist Disable Signal | (31) I | (31) — |
| (32) 32 | (32) 0.35 | (32) BU / BN | (32) 3161 | (32) Parking Assist Parallel Parking Disable Switch Signal | (32) I | (32) — |

## K9 Body Control Module X4



5203893

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 160027-0018
- Service Connector: 13534970
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( GY)

### Terminal Part Information

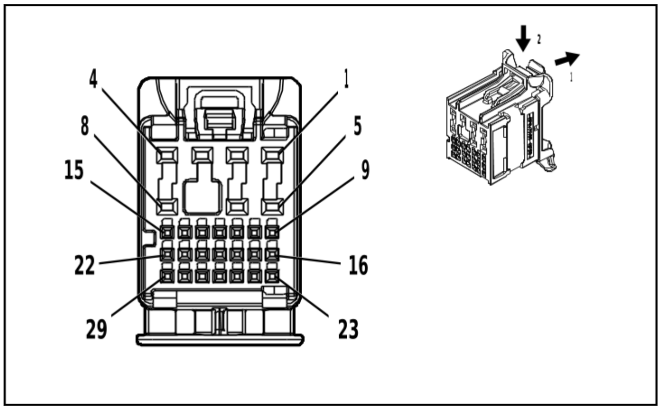
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

### K9 Body Control Module X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / VT | (3) 1449 | (3) Steering Wheel Resistor Ladder Low Reference | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GN / VT | (5) 5199 | (5) Run/Crank Relay Coil Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BN / BK | (7) 4996 | (7) Immobilizer Antenna Signal [+] | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) GY / GN | (10) 4083 | (10) Retained Accessory Power Relay 2 Coil Control | (10) I | (10) — |
| 11 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) WH / GY | (14) 4997 | (14) Immobilizer Antenna Low Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) BU / VT | (15) 1788 | (15) Traction Control Switch Signal 1 | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) GN / WH | (16) 4115 | (16) Body Control Module LIN Bus 5 | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (19) 19 | (19) 0.35 | (19) BU / GN | (19) 4103 | (19) AUTOSAR CAN Bus [+] 9 Serial Data | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / GN | (20) 4102 | (20) AUTOSAR CAN Bus [-] 9 Serial Data | (20) I | (20) — |
| 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.5 | (22) RD / WH | (22) 2740 | (22) Battery Positive Voltage | (22) II | (22) — |
| (23) 23 | (23) 1.5 | (23) RD / BU | (23) 2540 | (23) Battery Positive Voltage | (23) II | (23) — |
| (24) 24 | (24) 2.5 | (24) BK / WH | (24) 1851 | (24) Signal Ground | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) BK | (25) 1850 | (25) Ground | (25) II | (25) — |

**K9 Body Control Module X5**



4584346

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0012
- Service Connector: 13534972
- Description: 29-Way F 0.5 NANO, 1.2 MCON Series( GN)

## Terminal Part Information

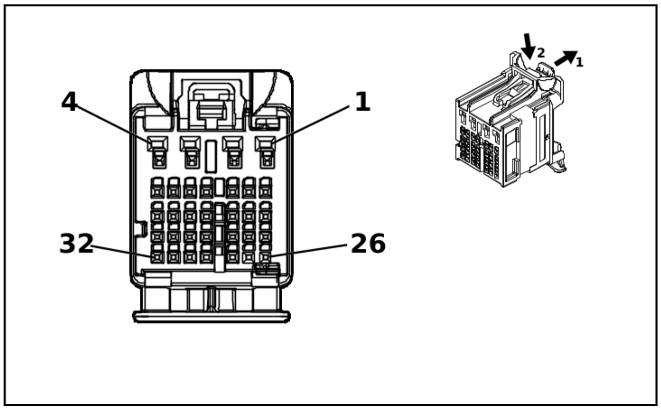
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / VT | (1) 4786 | (1) Dome/Reading Lamp Enable Signal | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / BN | (2) 7573 | (2) Air Conditioning Compressor Solenoid Valve Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 7574 | (3) Air Conditioning Compressor Solenoid Valve Control | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) WH | (4) 2679 | (4) Lock Actuators Unlock Control 1 | (4) II | (4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) GY | (5) 157 | (5) Interior Lamp Control | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) YE | (6) 6817 | (6) LED Backlight Dimming Control 1 | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.75 | (8) GY | (8) 2681 | (8) Left Front Door Lock Actuator Lock Control | (8) II | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) BN / WH | (11) 28 | (11) Horn Relay Control | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) WH / GN | (12) 4102 | (12) AUTOSAR CAN Bus [-] 9 Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / GN | (13) 4103 | (13) AUTOSAR CAN Bus [+] 9 Serial Data | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.35 | (15) WH / YE | (15) 7557 | (15) Interior Door Handle Accent Lighting Control | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) VT | (16) 4301 | (16) Passive Entry Left Antenna Signal High | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GN / YE | (17) 2855 | (17) Body Control Module LIN Bus 9 | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) VT / GY | (18) 126 | (18) Left Front Door Open Switch Signal | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GN / YE | (19) 6134 | (19) Body Control Module LIN Bus 3 | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) WH / BU | (21) 6311 | (21) Cruise/ETC/TCC Brake Signal | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) BN / VT | (22) 193 | (22) Rear Defogger Relay Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) VT / WH | (23) 4302 | (23) Passive Entry Left Antenna Signal Low | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) WH | (24) 5359 | (24) Brake Apply Sensor Control | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) BU / YE | (25) 5361 | (25) Brake Apply Sensor Signal | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) BK / BN | (26) 5360 | (26) Brake Apply Sensor Low Reference | (26) I | (26) — |
| 27 - 29 | — | — | — | Not Occupied | — | — |

### K9 Body Control Module X6



5202291

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0017
- Service Connector: 13534981
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series( BN with GY Inner Connector)

## Terminal Part Information

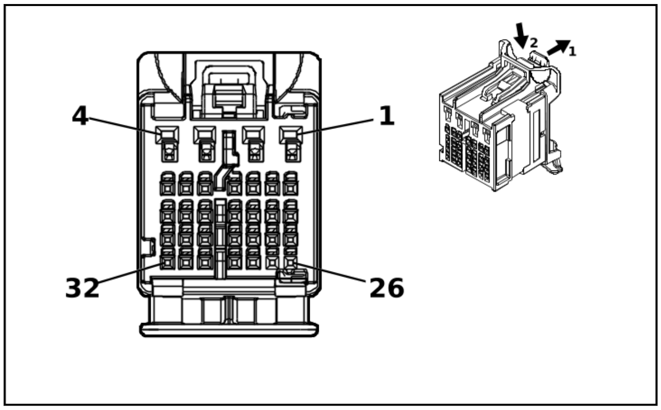
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.75 | (2) VT / WH | (2) 1094 | (2) Right Rear Door Lock Actuator Lock Control | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / BK | (3) 2680 | (3) Lock Actuators Unlock Control 2 | (3) II | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) YE / BU | (5) 5797 | (5) Rear Closure Handle Switch Open Signal | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BN / GN | (7) 3568 | (7) Rear Closure Passive Entry Antenna High Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN / GY | (8) 3569 | (8) Rear Closure Passive Entry Antenna Low Signal | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) GN / BU | (11) 6133 | (11) Body Control Module LIN Bus 2 | (11) I | (11) — |
| 12 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) BU / BN | (17) 8917 | (17) Left Front Door Ajar Switch Signal 2 | (17) I | (17) — |
| 18 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.35 | (22) BN / GN | (22) 4064 | (22) Hood Status B Signal | (22) I | (22) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 23 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.35 | (28) BU | (28) 2675 | (28) Left Front Exterior Door Handle Switch Unlock Signal | (28) I | (28) — |
| 29 - 30 | — | — | — | Not Occupied | — | — |
| (31) 31 | (31) 0.35 | (31) GY / BU | (31) 4995 | (31) Right Rear Door Exterior Switch Unlock Signal | (31) I | (31) — |
| 32 | — | — | — | Not Occupied | — | — |

### K9 Body Control Module X7



5202294

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 160028-0014
- Service Connector: 13534979
- Description: 32-Way F 0.5 MQS, 1.2 OCS Series( PU with GY Inner Connector)

## Terminal Part Information

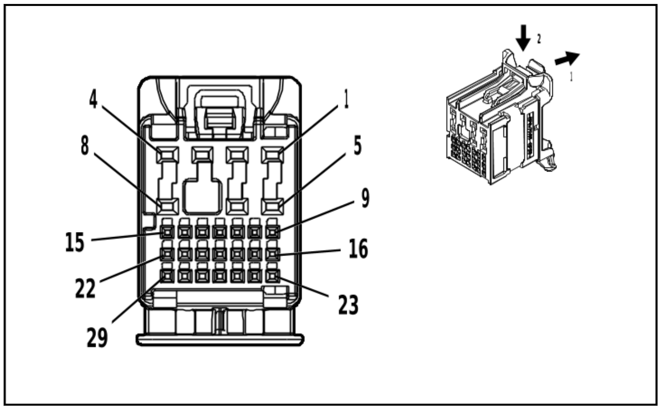
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |
| III | Not required | No Tool Required | No Tool Required |

## K9 Body Control Module X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 2689 | (2) Fuel Door Actuator Lock Control | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) WH / BU | (3) 3266 | (3) Child Security Lock Motor Lock Control | (3) II | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GY / BK | (5) 3268 | (5) Child Security Lock Actuator Status Signal Right Rear | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / WH | (6) 3269 | (6) Child Security Lock Actuator Status Signal Left Rear | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.35 | (8) WH / VT | (8) 12481 | (8) Hands Free Closure Release Sensor Alarm Control | (8) I | (8) — |
| 9 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.35 | (12) GN / VT | (12) 2860 | (12) Body Control Module LIN Bus 14 | (12) I | (12) — |
| 13 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) GY / YE | (17) 6188 | (17) Liftgate Window/Rear Compartment Lid Motor Unlatch Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) GN / GY | (18) 737 | (18) Rear Compartment Courtesy Lamp Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GN / VT | (19) 2857 | (19) Body Control Module LIN Bus 11 | (19) I | (19) — |
| 20 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) — | (24) YE | (24) 4783 | (24) Rear Footwell Accent Lighting Control | (24) III | (24) — |
| 25 - 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.35 | (27) VT / BU | (27) 7598 | (27) Glass Breakage Sensor 2 Signal | (27) I | (27) — |
| 28 - 32 | — | — | — | Not Occupied | — | — |

## K9 Body Control Module X8



4578560

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160014-0011
- Service Connector: 13534971
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( DK-GY with GY Inner Connector)

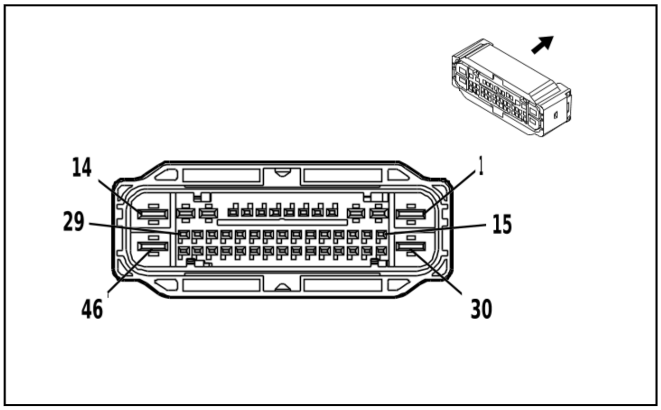
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

## K9 Body Control Module X8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / WH | (1) 6128 | (1) Rear Closure Unlatch Actuator Unlatch Control | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) BU / YE | (3) 1091 | (3) Left Rear Door Lock Actuator Lock Control | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) YE / GN | (4) 2682 | (4) Right Front Door Lock Actuator Lock Control | (4) II | (4) — |
| 5 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) GN / BK | (9) 4304 | (9) Passive Entry Right Antenna Signal Low | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GN / YE | (10) 4303 | (10) Passive Entry Right Antenna Signal High | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BU | (11) 3554 | (11) Interior Passive Entry Antenna 2 High Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY / BK | (12) 3555 | (12) Interior Passive Entry Antenna 2 Low Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) YE / BN | (13) 3037 | (13) Driver Seat Left Rear Haptic Movement Motor Control | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BN | (14) 3038 | (14) Driver Seat Right Rear Haptic Movement Motor Control | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) WH / VT | (16) 4994 | (16) Left Rear Door Exterior Switch Unlock Signal | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GN / YE | (17) 2862 | (17) Body Control Module LIN Bus 16 | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) GN / WH | (18) 2854 | (18) Body Control Module LIN Bus 8 | (18) I | (18) — |
| 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.35 | (20) GN / BU | (20) 2856 | (20) Body Control Module LIN Bus 10 | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) VT / WH | (21) 6675 | (21) Left Rear Door Lock Indicator Control | (21) I | (21) — |
| (22) 22 | (22) 0.35 | (22) YE / BK | (22) 6677 | (22) Right Rear Door Lock Indicator Control | (22) I | (22) — |
| 23 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.35 | (28) GY / VT | (28) 2676 | (28) Right Front Door Exterior Switch Unlock Signal | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) GN / GY | (29) 6135 | (29) Body Control Module LIN Bus 4 | (29) I | (29) — |

## K19 Suspension Control Module (Z95)



4162046

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35780377
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

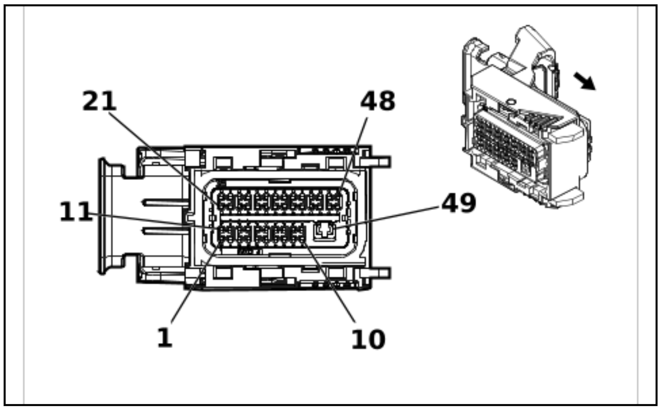
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370818 | J-35616-12 (BU) | J-38125-553 |
| II | 84634921 | J-35616-42 (RD) | J-38125-212 |

## K19 Suspension Control Module (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / GN | (1) 2440 | (1) Battery Positive Voltage | (1) II | (1) — |
| 2 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) BU / BK | (5) 4977 | (5) AUTOSAR CAN Bus [+] 3 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / BK | (6) 4977 | (6) AUTOSAR CAN Bus [+] 3 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4976 | (7) AUTOSAR CAN Bus [-] 3 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4976 | (8) AUTOSAR CAN Bus [-] 3 Serial Data | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.5 | (10) BN / BU | (10) 1116 | (10) Right Front Shock Absorber Actuator Control | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) GY / WH | (11) 1117 | (11) Right Front Shock Absorber Actuator Control | (11) I | (11) — |
| 12 - 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.75<br>(14) 2.5 | (14) BK<br>(14) BK | (14) 2150<br>(14) 2150 | (14) Ground<br>(14) Ground | (14) II<br>(14) II | (14) F47<br>(14) - F47 |
| (15) 15 | (15) 0.5 | (15) BN / WH | (15) 1107 | (15) Left Front Shock Absorber Actuator Control | (15) I | (15) — |
| 16 - 21 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (22) 22 | (22) 0.5 | (22) BU / GY | (22) 1114 | (22) Left Rear Shock Absorber Actuator Control | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) BK / BN | (23) 1099 | (23) Left Front Vertical Suspension Acceleration Sensor Low Reference | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) WH | (24) 1100 | (24) Left Front Vertical Suspension Acceleration Sensor Signal | (24) I | (24) — |
| (25) 25 | (25) 0.5 | (25) YE / RD | (25) 1817 | (25) Left Front Vertical Suspension Acceleration Sensor Voltage Reference | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) VT / RD | (26) 1818 | (26) Left Rear Vertical Suspension Acceleration Sensor Voltage Reference | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) YE / BN | (27) 1103 | (27) Left Rear Vertical Suspension Acceleration Sensor Signal | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) BK / VT | (28) 1833 | (28) Left Rear Vertical Suspension Acceleration Sensor Low Reference | (28) I | (28) — |
| (29) 29 | (29) 0.5 | (29) BN / GN | (29) 1118 | (29) Right Rear Shock Absorber Actuator Control | (29) I | (29) — |
| 30 | — | — | — | Not Occupied | — | — |
| (31) 31 | (31) 0.5 | (31) GY / BU | (31) 1113 | (31) Left Front Shock Absorber Actuator Control | (31) I | (31) — |
| 32 - 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 0.5 | (38) GN / VT | (38) 1115 | (38) Left Rear Shock Absorber Actuator Control | (38) I | (38) — |
| (39) 39 | (39) 0.5 | (39) BK / GN | (39) 1105 | (39) Right Front Vertical Suspension Acceleration Sensor Low Reference | (39) I | (39) — |
| (40) 40 | (40) 0.5 | (40) WH | (40) 1106 | (40) Right Front Vertical Suspension Acceleration Sensor Signal | (40) I | (40) — |
| (41) 41 | (41) 0.5 | (41) BN / RD | (41) 1819 | (41) Right Front Vertical Suspension Acceleration Sensor Voltage Reference | (41) I | (41) — |
| (42) 42 | (42) 0.5 | (42) GY / RD | (42) 1820 | (42) Right Rear Vertical Suspension Acceleration Sensor Voltage Reference | (42) I | (42) — |
| (43) 43 | (43) 0.5 | (43) YE / BU | (43) 1109 | (43) Right Rear Vertical Suspension Acceleration Sensor Signal | (43) I | (43) — |
| (44) 44 | (44) 0.5 | (44) BK / BU | (44) 1108 | (44) Right Rear Vertical Suspension Acceleration Sensor Low Reference | (44) I | (44) — |
| (45) 45 | (45) 0.5 | (45) GN / GY | (45) 1119 | (45) Right Rear Shock Absorber Actuator Control | (45) I | (45) — |
| 46 | — | — | — | Not Occupied | — | — |

## K20 Engine Control Module X1 (L84 / L87)



5663663

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 216744-0003
- Service Connector: 85669159
- Description: 49-Way F 0.64, 2.8 Series, Sealed( BK with BU Terminal Position Assurance)

## Terminal Part Information

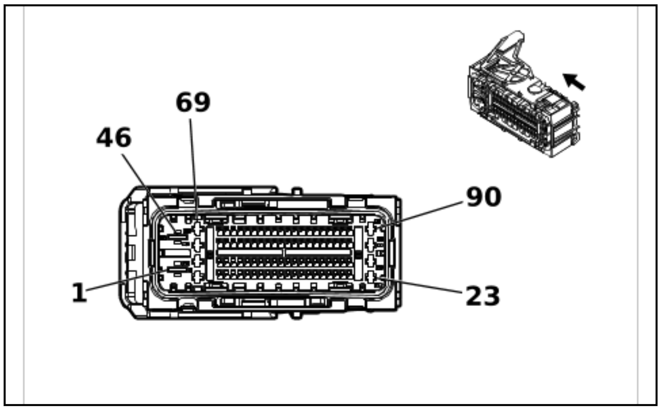
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19351723 | J-35616-64B (L-BU) | J-38125-213 |

## K20 Engine Control Module X1 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / WH | (1) 492 | (1) Mass Air Flow Sensor Signal | (1) II | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) II | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4976 | (5) AUTOSAR CAN Bus [-] 3 Serial Data | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4978 | (7) AUTOSAR CAN Bus [-] 2 Serial Data | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE | (9) 5991 | (9) Powertrain Relay Coil Control | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) YE | (11) 4063 | (11) Hood Status A Signal | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) BU / GY | (12) 636 | (12) Ambient Air Temperature Sensor Signal | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) WH | (13) 4055 | (13) Private Serial Data Powertrain CAN Bus [+] Serial Data | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) WH / GN | (14) 5380 | (14) Brake Position Sensor Signal | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) BU / BK | (15) 4977 | (15) AUTOSAR CAN Bus [+] 3 Serial Data | (15) II | (15) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.5 | (17) BU / YE | (17) 4979 | (17) AUTOSAR CAN Bus [+] 2 Serial Data | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) WH / GY | (18) 459 | (18) Air Conditioning Compressor Clutch Relay Control | (18) II | (18) — |
| 19 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.75 | (21) GN / BU | (21) 428 | (21) EVAP Canister Purge Solenoid Control | (21) II | (21) — |
| 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.5 | (23) BK / GN | (23) 580 | (23) Engine Control Sensors Low Reference 2 | (23) II | (23) — |
| (24) 24 | (24) 0.5 | (24) BK / BU | (24) 1271 | (24) Accelerator Pedal Position Low Reference 1 | (24) II | (24) — |
| 25 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) BN / GN | (28) 1174 | (28) Oil Level Switch Signal | (28) II | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) BK / VT | (30) 1272 | (30) Accelerator Pedal Position Low Reference 2 | (30) II | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.75 | (32) VT / BU | (32) 5291 | (32) Powertrain Main Relay Fused Supply Voltage 2 | (32) II | (32) — |
| 33 | — | — | — | Not Occupied | — | — |
| (34) 34 | (34) 0.5 | (34) RD / BN | (34) 440 | (34) Battery Positive Voltage | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) YE / BK | (36) 625 | (36) Starter Enable Relay Control | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) GN / GY | (37) 465 | (37) Fuel Pump Primary Relay Control | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) WH / RD | (38) 1164 | (38) Accelerator Pedal Position 5V Reference 1 | (38) II | (38) — |
| (39) 39 | (39) 0.5 | (39) YE / WH | (39) 1161 | (39) Accelerator Pedal Position Signal 1 | (39) II | (39) — |
| (40) 40 | (40) 0.5 | (40) YE / BN | (40) 331 | (40) Oil Pressure Sensor Signal | (40) II | (40) — |
| (41) 41 | (41) 0.5 | (41) GN | (41) 380 | (41) Air Conditioning Refrigerant Pressure Sensor Signal | (41) II | (41) — |
| 42 - 43 | — | — | — | Not Occupied | — | — |
| (44) 44 | (44) 0.5 | (44) GN / WH | (44) 1162 | (44) Accelerator Pedal Position Signal 2 | (44) II | (44) — |
| (45) 45 | (45) 0.5 | (45) BN / RD | (45) 1274 | (45) Accelerator Pedal Position 5V Reference 2 | (45) II | (45) — |
| 46 | — | — | — | Not Occupied | — | — |
| (47) 47 | (47) 0.75 | (47) VT / GN | (47) 439 | (47) Run/Crank Ignition 1 Voltage | (47) II | (47) — |
| (48) 48 | (48) 0.75 | (48) VT / BU | (48) 5290 | (48) Powertrain Main Relay Fused Supply Voltage 1 | (48) II | (48) — |
| (49) 49 | (49) 2 | (49) VT | (49) 5290 | (49) Powertrain Main Relay Fused Supply Voltage 1 | (49) I | (49) — |

### K20 Engine Control Module X1 (LZ0)



5492269

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 12699571
- Service Connector: 84941451
- Description: 90-Way F 0.64 GEN-Y, 2.8, 6.3 MCP Series, Sealed( BK with BU Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19367373 | J-35616-64B (L-BU) | J-38125-215A |
| II | 19371214 | J-35616-35 (VT) | J-38125-556 |
| III | 84616649 | J-35616-42 (RD) | J-38125-556 |

## K20 Engine Control Module X1 (LZ0)

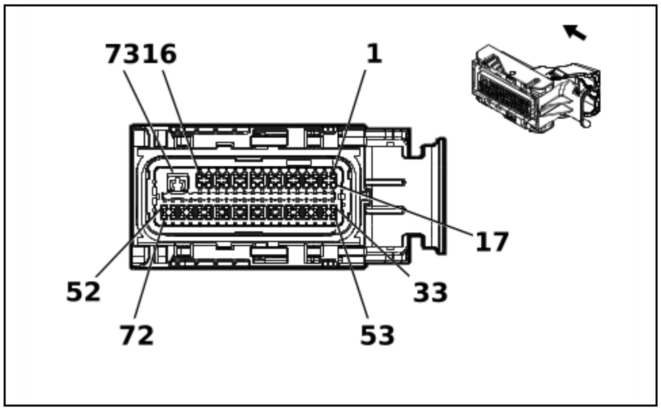
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 6 | (1) BN / BU | (1) 104 | (1) Glow Plug Control | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) GY / YE | (2) 1584 | (2) Glow Plug 4 Control | (2) II | (2) — |
| 3 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) WH / GY | (6) 459 | (6) Air Conditioning Compressor Clutch Relay Control | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) RD / BN | (7) 440 | (7) Battery Positive Voltage | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) GN / WH | (8) 492 | (8) Mass Air Flow Sensor Signal | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) GY | (11) 2973 | (11) Coolant Flow Control Valve Position Signal | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) GN / GY | (12) 7316 | (12) Intake Manifold Runner Valve Actuator Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) GN | (13) 10289 | (13) Exhaust Gas Temperature Sensor SENT 1 Signal | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BU | (14) 10290 | (14) Exhaust Gas Temperature Sensor SENT 2 Signal | (14) I | (14) — |
| (15) 15 | (15) 0.5 | (15) BN / GN | (15) 4305 | (15) Exhaust Flow Control Valve 1 | (15) I | (15) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.5 | (16) WH | (16) 4055 | (16) Private Serial Data Powertrain CAN Bus [+] Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.5 | (17) BU / BK | (17) 4977 | (17) AUTOSAR CAN Bus [+] 3 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.5 | (18) BU / YE | (18) 4979 | (18) AUTOSAR CAN Bus [+] 2 Serial Data | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BK / GN | (19) 580 | (19) Engine Control Sensors Low Reference 2 | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.75 | (21) GY / BK | (21) 1330 | (21) Variable Geometry Turbocharger Position Sensor Motor Close Control | (21) I | (21) — |
| (22) 22 | (22) 0.75 | (22) WH / BN | (22) 1313 | (22) Variable Geometry Turbocharger Position Sensor Motor Open Control | (22) I | (22) — |
| (23) 23 | (23) 2.5 | (23) GY / GN | (23) 1583 | (23) Glow Plug 3 Control | (23) II | (23) — |
| (24) 24 | (24) 2.5 | (24) GY / BN | (24) 1582 | (24) Glow Plug 2 Control | (24) II | (24) — |
| (25) 25 | (25) 0.75 | (25) VT / GN | (25) 439 | (25) Run/Crank Ignition 1 Voltage | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) YE | (26) 5991 | (26) Powertrain Relay Coil Control | (26) I | (26) — |
| 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) GN / BN | (28) 507 | (28) Wait To Start Indicator Control | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) BK / GY | (30) 626 | (30) Engine Control Vehicle Sensors Low Reference 1 | (30) I | (30) — |
| 31 - 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) WH / BN | (33) 2363 | (33) Exhaust Pressure Sensor SENT 1 Signal | (33) I | (33) — |
| (34) 34 | (34) 0.5 | (34) VT / YE | (34) 5947 | (34) Turbocharger Vane Position Sensor Signal | (34) I | (34) — |
| (35) 35 | (35) 0.5 | (35) BN / WH | (35) 5763 | (35) Exhaust Gas Recirculation Position Signal | (35) I | (35) — |
| (36) 36 | (36) 0.5 | (36) BU / GY | (36) 2978 | (36) Coolant Diverter Valve Position Signal | (36) I | (36) — |
| (37) 37 | (37) 0.5 | (37) GN | (37) 10478 | (37) Low Pressure Exhaust Gas Recirculation Sensor SENT Signal | (37) I | (37) — |
| (38) 38 | (38) 0.5 | (38) BU / GY | (38) 4054 | (38) Private Serial Data Powertrain CAN Bus [-] Serial Data | (38) I | (38) — |
| (39) 39 | (39) 0.5 | (39) WH | (39) 4976 | (39) AUTOSAR CAN Bus [-] 3 Serial Data | (39) I | (39) — |
| (40) 40 | (40) 0.5 | (40) WH | (40) 4978 | (40) AUTOSAR CAN Bus [-] 2 Serial Data | (40) I | (40) — |
| 41 | — | — | — | Not Occupied | — | — |
| (42) 42 | (42) 0.5 | (42) YE / BK | (42) 625 | (42) Starter Enable Relay Control | (42) I | (42) — |
| (43) 43 | (43) 0.75 | (43) VT / BK | (43) 5746 | (43) Exhaust Gas Recirculation Valve Low Control | (43) I | (43) — |
| (44) 44 | (44) 0.75 | (44) WH / VT | (44) 5764 | (44) Exhaust Gas Recirculation Valve High Control | (44) I | (44) — |
| (45) 45 | (45) 2.5 | (45) GY / WH | (45) 1585 | (45) Glow Plug 5 Control | (45) II | (45) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (46) 46 | (46) 5 | (46) BK / WH | (46) 6151 | (46) Engine Control Module Ground | (46) III | (46) — |
| (47) 47 | (47) 2.5 | (47) GY / VT | (47) 1586 | (47) Glow Plug 6 Control | (47) II | (47) — |
| (48) 48 | (48) 0.5 | (48) WH / RD | (48) 480 | (48) Engine Control Vehicle Sensors 5 Volt Reference 1 | (48) I | (48) — |
| (49) 49 | (49) 0.5 | (49) GN / WH | (49) 1162 | (49) Accelerator Pedal Position Signal 2 | (49) I | (49) — |
| (50) 50 | (50) 0.5 | (50) BK / VT | (50) 1272 | (50) Accelerator Pedal Position Low Reference 2 | (50) I | (50) — |
| (51) 51 | (51) 0.5 | (51) BK / BU | (51) 1271 | (51) Accelerator Pedal Position Low Reference 1 | (51) I | (51) — |
| (52) 52 | (52) 0.5 | (52) WH / GN | (52) 5380 | (52) Brake Position Sensor Signal | (52) I | (52) — |
| 53 - 54 | — | — | — | Not Occupied | — | — |
| (55) 55 | (55) 0.5 | (55) YE | (55) 4063 | (55) Hood Status A Signal | (55) I | (55) — |
| 56 - 58 | — | — | — | Not Occupied | — | — |
| (59) 59 | (59) 0.5 | (59) GN | (59) 380 | (59) Air Conditioning Refrigerant Pressure Sensor Signal | (59) I | (59) — |
| (60) 60 | (60) 0.5 | (60) YE / BN | (60) 331 | (60) Oil Pressure Sensor Signal | (60) I | (60) — |
| (61) 61 | (61) 0.5 | (61) YE / GY | (61) 3926 | (61) Crankcase Differential Pressure Sensor Signal | (61) I | (61) — |
| 62 - 63 | — | — | — | Not Occupied | — | — |
| (64) 64 | (64) 0.5 | (64) GN / BU | (64) 3889 | (64) Powertrain Sensor Bus Relay Control | (64) I | (64) — |
| 65 | — | — | — | Not Occupied | — | — |
| (66) 66 | (66) 0.75 | (66) BN | (66) 1421 | (66) Exhaust Restrictor Motor Closed Control | (66) I | (66) — |
| (67) 67 | (67) 0.75 | (67) YE / BN | (67) 1420 | (67) Exhaust Restrictor Motor Open Control | (67) I | (67) — |
| (68) 68 | (68) 2.5 | (68) GY / BU | (68) 1581 | (68) Glow Plug 1 Control | (68) II | (68) — |
| (69) 69 | (69) 2.5 | (69) VT / BU | (69) 5291 | (69) Powertrain Main Relay Fused Supply Voltage 2 | (69) II | (69) — |
| (70) 70 | (70) 0.5 | (70) BU / RD | (70) 460 | (70) Engine Control Sensors 5 Volt Reference 1 | (70) I | (70) — |
| (71) 71 | (71) 0.5 | (71) BN / RD | (71) 1274 | (71) Accelerator Pedal Position 5V Reference 2 | (71) I | (71) — |
| (72) 72 | (72) 0.5 | (72) WH / RD | (72) 1164 | (72) Accelerator Pedal Position 5V Reference 1 | (72) I | (72) — |
| (73) 73 | (73) 0.5 | (73) YE / WH | (73) 1161 | (73) Accelerator Pedal Position Signal 1 | (73) I | (73) — |
| (74) 74 | (74) 0.5 | (74) BU / GY | (74) 636 | (74) Ambient Air Temperature Sensor Signal | (74) I | (74) — |
| (75) 75 | (75) 0.5 | (75) VT | (75) 7485 | (75) Engine Oil Temperature Sensor 2 Signal | (75) I | (75) — |
| 76 - 85 | — | — | — | Not Occupied | — | — |
| (86) 86 | (86) 0.5 | (86) GN / GY | (86) 465 | (86) Fuel Pump Primary Relay Control | (86) I | (86) — |
| (87) 87 | (87) 0.75 | (87) VT / BU | (87) 5294 | (87) Powertrain Main Relay Fused Supply Voltage 5 | (87) I | (87) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (88) 88 | (88) 0.75 | (88) GY / BN | (88) 2972 | (88) Coolant Flow Control Actuator Control Close | (88) I | (88) — |
| (89) 89 | (89) 0.75 | (89) GY / BU | (89) 2971 | (89) Coolant Flow Control Actuator Control Open | (89) I | (89) — |
| (90) 90 | (90) 2.5 | (90) VT / BU | (90) 5290 | (90) Powertrain Main Relay Fused Supply Voltage 1 | (90) II | (90) — |

### K20 Engine Control Module X2 (L84 / L87)



1673472

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 216739-0001
- Service Connector: 85761019
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed( BK with BK Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

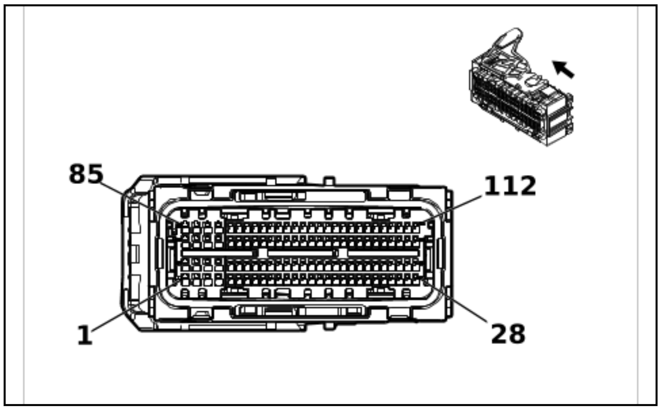
## K20 Engine Control Module X2 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 3212 | (1) HO2S Heater Low Control Bank 2 Sensor 1 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 5493 | (2) Cylinder Deactivation Solenoid Valve Control 3 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 548 | (3) Engine Control Sensors Low Reference 1 | (3) II | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) GN / WH | (7) 4622 | (7) Engine Control Module LIN Bus 2 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) GN / VT | (8) 4621 | (8) Engine Control Module LIN Bus 1 | (8) II | (8) — |
| 9 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) YE / BU | (12) 2124 | (12) Ignition Control 4 | (12) II | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.5 | (13) BN / BU | (13) 2126 | (13) Ignition Control 6 | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) VT / BU | (14) 5294 | (14) Powertrain Main Relay Fused Supply Voltage 5 | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) VT / BU | (15) 5294 | (15) Powertrain Main Relay Fused Supply Voltage 5 | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) VT / BU | (16) 5294 | (16) Powertrain Main Relay Fused Supply Voltage 5 | (16) II | (16) — |
| (17) 17 | (17) 0.5 | (17) GY / WH | (17) 3113 | (17) HO2S Heater Low Control Bank 1 Sensor 1 | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) YE / GY | (18) 2493 | (18) Cylinder Shutoff Solenoid Enable Signal 3 | (18) II | (18) — |
| 19 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.5 | (22) GN | (22) 6935 | (22) HO2S Pump Current Trim Signal | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) BN / WH | (23) 6933 | (23) HO2S Pump Current Signal | (23) II | (23) — |
| (24) 24 | (24) 0.5 | (24) BN | (24) 6934 | (24) HO2S Ground | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) YE / GY | (25) 6936 | (25) HO2S Signal | (25) II | (25) — |
| 26 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) GN / BU | (28) 2123 | (28) Ignition Control 3 | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / GY | (29) 2125 | (29) Ignition Control 5 | (29) II | (29) — |
| (30) 30 | (30) 0.75 | (30) BK / GY | (30) 2130 | (30) Ignition Control Low Reference Bank 2 | (30) II | (30) — |
| (31) 31 | (31) 0.5 | (31) BN | (31) 5496 | (31) Cylinder Deactivation Solenoid Valve Control 6 | (31) II | (31) — |
| (32) 32 | (32) 0.5 | (32) YE / BN | (32) 2496 | (32) Cylinder Shutoff Solenoid Enable Signal 6 | (32) II | (32) — |
| (33) 33 | (33) 0.75 | (33) WH / BN | (33) 3223 | (33) HO2S Heater Low Control Bank 2 Sensor 2 | (33) II | (33) — |
| 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) BU | (35) 179 | (35) Engine Oil Pump Control | (35) II | (35) — |
| (36) 36 | (36) 0.5 | (36) YE / GN | (36) 2494 | (36) Cylinder Shutoff Solenoid Enable Signal 4 | (36) II | (36) — |
| (37) 37 | (37) 0.75 | (37) VT / BU | (37) 5294 | (37) Powertrain Main Relay Fused Supply Voltage 5 | (37) II | (37) — |
| 38 | — | — | — | Not Occupied | — | — |
| (39) 39 | (39) 0.5 | (39) WH / RD | (39) 480 | (39) Engine Control Vehicle Sensors 5 Volt Reference 1 | (39) II | (39) — |
| 40 - 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 0.5 | (46) YE / BU | (46) 3221 | (46) HO2S Low Signal Bank 2 Sensor 2 | (46) II | (46) — |
| (47) 47 | (47) 0.5 | (47) VT / GN | (47) 3220 | (47) HO2S High Signal Bank 2 Sensor 2 | (47) II | (47) — |
| (48) 48 | (48) 0.5 | (48) BU | (48) 2572 | (48) Heated Oxygen Sensor 2 Current Adjust Signal | (48) II | (48) — |
| (49) 49 | (49) 0.5 | (49) YE / WH | (49) 2570 | (49) Heated Oxygen Sensor 2 Pump Current Signal | (49) II | (49) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (50) 50 | (50) 0.75 | (50) BK / GY | (50) 2303 | (50) Knock Sensor Low Reference 2 | (50) II | (50) — |
| (51) 51 | (51) 0.75 | (51) BK / YE | (51) 1716 | (51) Knock Sensor Low Reference 1 | (51) II | (51) — |
| (52) 52 | (52) 0.5 | (52) BN / WH | (52) 582 | (52) Throttle Actuator Close Control | (52) II | (52) — |
| (53) 53 | (53) 0.75 | (53) GY / WH | (53) 3122 | (53) HO2S Heater Low Control Bank 1 Sensor 2 | (53) II | (53) — |
| (54) 54 | (54) 0.5 | (54) VT | (54) 5495 | (54) Cylinder Deactivation Solenoid Valve Control 5 | (54) II | (54) — |
| (55) 55 | (55) 0.5 | (55) WH / VT | (55) 2495 | (55) Cylinder Shutoff Solenoid Enable Signal 5 | (55) II | (55) — |
| (56) 56 | (56) 0.5 | (56) YE / BU | (56) 5494 | (56) Cylinder Deactivation Solenoid Valve Control 4 | (56) II | (56) — |
| (57) 57 | (57) 0.5 | (57) GN | (57) 5492 | (57) Cylinder Deactivation Solenoid Valve Control 2 | (57) II | (57) — |
| (58) 58 | (58) 0.5 | (58) WH / GN | (58) 2492 | (58) Cylinder Shutoff Solenoid Enable Signal 2 | (58) II | (58) — |
| (59) 59 | (59) 0.5 | (59) BU / RD | (59) 460 | (59) Engine Control Sensors 5 Volt Reference 1 | (59) II | (59) — |
| 60 - 65 | — | — | — | Not Occupied | — | — |
| (66) 66 | (66) 0.5 | (66) WH / YE | (66) 3121 | (66) HO2S Low Signal Bank 1 Sensor 2 | (66) II | (66) — |
| (67) 67 | (67) 0.5 | (67) VT / BU | (67) 3120 | (67) HO2S High Signal Bank 1 Sensor 2 | (67) II | (67) — |
| (68) 68 | (68) 0.5 | (68) WH | (68) 2571 | (68) Heated Oxygen Sensor 2 Common Bank 2 Sensor 1 Signal | (68) II | (68) — |
| (69) 69 | (69) 0.5 | (69) BN / GY | (69) 2573 | (69) Heated Oxygen Sensor 2 Collector Signal | (69) II | (69) — |
| (70) 70 | (70) 0.75 | (70) WH / GY | (70) 1876 | (70) Knock Sensor 2 Signal | (70) II | (70) — |
| (71) 71 | (71) 0.75 | (71) VT / GY | (71) 496 | (71) Knock Sensor 1 Signal | (71) II | (71) — |
| (72) 72 | (72) 0.5 | (72) YE | (72) 581 | (72) Throttle Actuator Open Control | (72) II | (72) — |
| (73) 73 | (73) 2.5 | (73) BK / WH | (73) 6151 | (73) Engine Control Module Ground | (73) I | (73) — |

### K20 Engine Control Module X2 (LZ0)



5491584

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 12699573
- Service Connector: 84941452
- Description: 112-Way F 0.64 GEN-Y, 1.2 MCON Series, Sealed( BK with BK Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19367373 | J-35616-64B (L-BU) | J-38125-215A |
| II | 84963773 | J-35616-12 (BU) | J-38125-215A |

## K20 Engine Control Module X2 (LZ0)

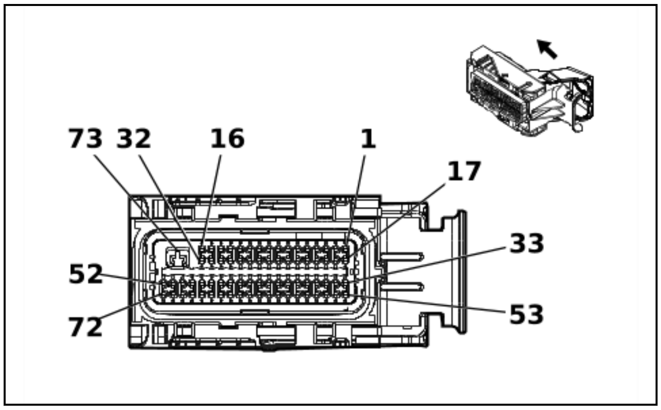
| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN | (1) 4803 | (1) Direct Fuel Injector High Voltage Control Cylinder 3 | (1) II | (1) — |
| (2) 2 | (2) 1.5 | (2) GY / BU | (2) 4804 | (2) Direct Fuel Injector High Voltage Control Cylinder 4 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) YE | (3) 2420 | (3) Fuel High Pressure Pump Low Enable Signal | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) YE / VT | (4) 7245 | (4) High Pressure Fuel Pump Low Enable Signal | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / YE | (5) 5297 | (5) Exhaust Camshaft Position Sensor 1 Voltage Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN | (6) 6271 | (6) Crankshaft Position Sensor Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) VT / BU | (7) 6270 | (7) Crankshaft Position Sensor Voltage | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) BN | (9) 25 | (9) Charge Indicator Control | (9) I | (9) — |
| (10) 10 | (10) 0.75 | (10) BU / YE | (10) 11616 | (10) Diesel Exhaust Fluid Dosing Valve Low Control 2 | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BK / GN | (11) 3235 | (11) Exhaust Gas Recirculation Temperature Sensor 3 Low Reference | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) YE / BU | (12) 3680 | (12) Charge Air Cooler Outlet Temperature Sensor Low Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) YE / BK | (13) 3682 | (13) Charge Air Cooler Inlet Temperature Sensor Low Reference | (13) I | (13) — |
| 14 - 22 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (23) 23 | (23) 0.75 | (23) BN / WH | (23) 3100 | (23) Diesel Exhaust Fluid Dosing Valve Low Control | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) BK / YE | (24) 2834 | (24) Fuel Rail Pressure Solenoid Valve Low Control | (24) I | (24) — |
| (25) 25 | (25) 0.5 | (25) BU | (25) 179 | (25) Engine Oil Pump Control | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.75 | (27) BN / WH | (27) 582 | (27) Throttle Actuator Close Control | (27) I | (27) — |
| (28) 28 | (28) 0.75 | (28) YE | (28) 581 | (28) Throttle Actuator Open Control | (28) I | (28) — |
| (29) 29 | (29) 1.5 | (29) GN / GY | (29) 4903 | (29) Direct Fuel Injector High Voltage Supply Cylinder 3 | (29) II | (29) — |
| (30) 30 | (30) 1.5 | (30) BU / WH | (30) 4904 | (30) Direct Fuel Injector High Voltage Supply Cylinder 4 | (30) II | (30) — |
| (31) 31 | (31) 0.75 | (31) GY | (31) 2419 | (31) Fuel High Pressure Pump High Side Supply Voltage | (31) II | (31) — |
| (32) 32 | (32) 0.75 | (32) GY / BN | (32) 7244 | (32) High Pressure Fuel Pump High Side Control | (32) II | (32) — |
| (33) 33 | (33) 0.5 | (33) BK / GY | (33) 5296 | (33) Exhaust Camshaft Position Sensor Low Reference 1 | (33) I | (33) — |
| (34) 34 | (34) 0.5 | (34) VT / BK | (34) 5273 | (34) Exhaust Camshaft Position Sensor 1 | (34) I | (34) — |
| (35) 35 | (35) 0.5 | (35) BK / VT | (35) 6272 | (35) Crankshaft Position Sensor Low Reference | (35) I | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) BU | (37) 3017 | (37) Fuel Heater Relay 1 Control | (37) I | (37) — |
| 38 | — | — | — | Not Occupied | — | — |
| (39) 39 | (39) 0.5 | (39) WH / GY | (39) 3234 | (39) Exhaust Gas Recirculation Temperature Sensor 3 Signal | (39) I | (39) — |
| (40) 40 | (40) 0.5 | (40) BN | (40) 3681 | (40) Charge Air Cooler Outlet Temperature Sensor Signal | (40) I | (40) — |
| (41) 41 | (41) 0.5 | (41) GN | (41) 3683 | (41) Charge Air Cooler Inlet Temperature Sensor Signal | (41) I | (41) — |
| 42 - 48 | — | — | — | Not Occupied | — | — |
| (49) 49 | (49) 0.75 | (49) BU | (49) 11615 | (49) Diesel Exhaust Fluid Dosing Valve High Control 2 | (49) I | (49) — |
| 50 | — | — | — | Not Occupied | — | — |
| (51) 51 | (51) 0.75 | (51) BN | (51) 3099 | (51) Diesel Exhaust Fluid Dosing Valve High Control | (51) I | (51) — |
| (52) 52 | (52) 0.5 | (52) BU / WH | (52) 2530 | (52) Fuel Rail Pressure Solenoid Valve Control | (52) I | (52) — |
| (53) 53 | (53) 0.5 | (53) YE / BN | (53) 106 | (53) Oil Pump Motor Control | (53) I | (53) — |
| 54 | — | — | — | Not Occupied | — | — |
| (55) 55 | (55) 0.75 | (55) BK / BU | (55) 1408 | (55) Variable Swirl Valve Close Control | (55) I | (55) — |
| (56) 56 | (56) 0.75 | (56) BK / GN | (56) 1389 | (56) Variable Swirl Valve Open Control | (56) I | (56) — |
| (57) 57 | (57) 1.5 | (57) VT / GY | (57) 4906 | (57) Direct Fuel Injector High Voltage Supply Cylinder 6 | (57) II | (57) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (58) 58 | (58) 1.5 | (58) BN / WH | (58) 4901 | (58) Direct Fuel Injector High Voltage Supply Cylinder 1 | (58) II | (58) — |
| (59) 59 | (59) 1.5 | (59) GN / WH | (59) 4905 | (59) Direct Fuel Injector High Voltage Supply Cylinder 5 | (59) II | (59) — |
| (60) 60 | (60) 1.5 | (60) BU / GY | (60) 4902 | (60) Direct Fuel Injector High Voltage Supply Cylinder 2 | (60) II | (60) — |
| 61 - 62 | — | — | — | Not Occupied | — | — |
| (63) 63 | (63) 0.5 | (63) BN | (63) 10515 | (63) Electronic Transmission Range Select Shifter Position Sensor 1 Signal | (63) I | (63) — |
| (64) 64 | (64) 0.5 | (64) GY | (64) 10518 | (64) Electronic Transmission Range Select Shifter Position Sensor 2 Signal | (64) I | (64) — |
| 65 | — | — | — | Not Occupied | — | — |
| (66) 66 | (66) 0.5 | (66) BN / RD | (66) 2917 | (66) Fuel Rail Pressure Sensor 5V Reference | (66) I | (66) — |
| (67) 67 | (67) 0.5 | (67) BK / GN | (67) 2919 | (67) Fuel Rail Pressure Sensor Low Reference | (67) I | (67) — |
| 68 | — | — | — | Not Occupied | — | — |
| (69) 69 | (69) 0.5 | (69) BN / BU | (69) 357 | (69) Oil Temperature Sensor Signal | (69) I | (69) — |
| (70) 70 | (70) 0.5 | (70) YE / BK | (70) 3000 | (70) Coolant Temperature Sensor 2 Signal | (70) I | (70) — |
| 71 - 72 | — | — | — | Not Occupied | — | — |
| (73) 73 | (73) 0.5 | (73) WH / BU | (73) 7329 | (73) Pre-Throttle Air Temperature Signal | (73) I | (73) — |
| 74 | — | — | — | Not Occupied | — | — |
| (75) 75 | (75) 0.5 | (75) BK / YE | (75) 548 | (75) Engine Control Sensors Low Reference 1 | (75) I | (75) — |
| (76) 76 | (76) 0.75 | (76) GN / VT | (76) 4621 | (76) Engine Control Module LIN Bus 1 | (76) I | (76) — |
| (77) 77 | (77) 0.5 | (77) GN / WH | (77) 4622 | (77) Engine Control Module LIN Bus 2 | (77) I | (77) — |
| (78) 78 | (78) 0.5 | (78) GN / YE | (78) 4623 | (78) Engine Control Module LIN Bus 3 | (78) I | (78) — |
| 79 - 82 | — | — | — | Not Occupied | — | — |
| (83) 83 | (83) 0.75 | (83) BU / BN | (83) 2977 | (83) Coolant Diverter Valve Actuator Control Close | (83) I | (83) — |
| (84) 84 | (84) 0.75 | (84) BU | (84) 2976 | (84) Coolant Diverter Valve Actuator Control Open | (84) I | (84) — |
| (85) 85 | (85) 1.5 | (85) VT / GN | (85) 4806 | (85) Direct Fuel Injector High Voltage Control Cylinder 6 | (85) II | (85) — |
| (86) 86 | (86) 1.5 | (86) BN | (86) 4801 | (86) Direct Fuel Injector High Voltage Control Cylinder 1 | (86) II | (86) — |
| (87) 87 | (87) 1.5 | (87) BU | (87) 4802 | (87) Direct Fuel Injector High Voltage Control Cylinder 2 | (87) II | (87) — |
| (88) 88 | (88) 1.5 | (88) WH / GN | (88) 4805 | (88) Direct Fuel Injector High Voltage Control Cylinder 5 | (88) II | (88) — |
| 89 | — | — | — | Not Occupied | — | — |
| (90) 90 | (90) 0.5 | (90) BU / WH | (90) 3630 | (90) Throttle Position Sensor SENT 1 Signal | (90) I | (90) — |
| (91) 91 | (91) 0.5 | (91) BU / GN | (91) 4012 | (91) Exhaust Gas Recirculation 2 Valve Position Sensor Signal | (91) I | (91) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (92) 92 | (92) 0.5 | (92) GY | (92) 23 | (92) Generator Field Duty Cycle Signal | (92) I | (92) — |
| 93 | — | — | — | Not Occupied | — | — |
| (94) 94 | (94) 0.5 | (94) BU / WH | (94) 2918 | (94) Fuel Rail Pressure Sensor Signal | (94) I | (94) — |
| (95) 95 | (95) 0.5 | (95) YE / BU | (95) 2408 | (95) Engine Inlet Coolant Temperature Signal | (95) I | (95) — |
| (96) 96 | (96) 0.5 | (96) BN / YE | (96) 2161 | (96) Fuel Rail Pressure Sensor 2 Signal | (96) I | (96) — |
| (97) 97 | (97) 0.5 | (97) VT | (97) 2988 | (97) Engine Outlet Coolant Temperature Signal | (97) I | (97) — |
| 98 - 100 | — | — | — | Not Occupied | — | — |
| (101) 101 | (101) 0.5 | (101) GN / WH | (101) 432 | (101) Manifold Absolute Pressure Sensor Signal | (101) I | (101) — |
| (102) 102 | (102) 0.5 | (102) GN / YE | (102) 37 | (102) Engine Block Temperature Sensor Signal | (102) I | (102) — |
| (103) 103 | (103) 0.5 | (103) BU / BK | (103) 1422 | (103) Engine Water Charge Air Coolant Temperature Signal | (103) I | (103) — |
| 104 - 110 | — | — | — | Not Occupied | — | — |
| (111) 111 | (111) 0.75 | (111) BU / BN | (111) 4013 | (111) Exhaust Gas Recirculation 2 Valve Close Control | (111) I | (111) — |
| (112) 112 | (112) 0.75 | (112) BU / WH | (112) 4014 | (112) Exhaust Gas Recirculation 2 Valve Open Control | (112) I | (112) — |

## K20 Engine Control Module X3



1650395

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 216739-0002
- Service Connector: 85761016
- Description: 73-Way F 0.64, 2.8 MX123 Series, Sealed( BK with GY Terminal Position Assurance)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

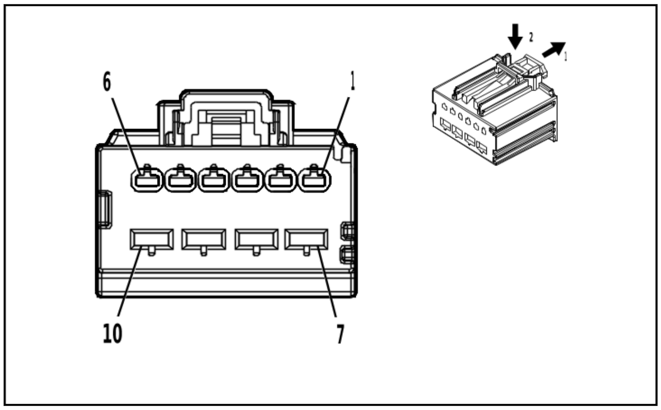
## K20 Engine Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 5497 | (1) Cylinder Deactivation Solenoid Valve Control 7 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 2497 | (2) Cylinder Shutoff Solenoid Enable Signal 7 | (2) II | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) Intake Camshaft Position Actuator Solenoid Valve 1 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) VT / GN | (6) 4320 | (6) Powertrain Sensor Bus Enable | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) YE / VT | (8) 5275 | (8) Intake Camshaft Position Sensor 1 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) GY / BU | (9) 5300 | (9) Intake Camshaft Position Sensor 1 Voltage Reference | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) GN | (10) 6271 | (10) Crankshaft Position Sensor Signal | (10) II | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.75 | (12) BU / WH | (12) 2122 | (12) Ignition Control 2 | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) VT / WH | (13) 2128 | (13) Ignition Control 8 | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) BN | (14) 25 | (14) Charge Indicator Control | (14) II | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.75 | (16) YE | (16) 7301 | (16) High Pressure Fuel Pump High Control | (16) II | (16) — |
| 17 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) BK / BN | (21) 6753 | (21) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (21) II | (21) — |
| 22 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) BK / GN | (24) 5301 | (24) Intake Camshaft Position Sensor Low Reference 1 | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) VT / BU | (25) 6270 | (25) Crankshaft Position Sensor Voltage | (25) II | (25) — |
| (26) 26 | (26) 0.5 | (26) BK / VT | (26) 6272 | (26) Crankshaft Position Sensor Low Reference | (26) II | (26) — |
| 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) GN / GY | (28) 2127 | (28) Ignition Control 7 | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / VT | (29) 2121 | (29) Ignition Control 1 | (29) II | (29) — |
| (30) 30 | (30) 0.5 | (30) BK / BU | (30) 2129 | (30) Ignition Control Low Reference Bank 1 | (30) II | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.75 | (32) VT / BK | (32) 7300 | (32) High Pressure Fuel Pump Low Control | (32) II | (32) — |
| (33) 33 | (33) 0.5 | (33) YE / VT | (33) 4325 | (33) Starter Pinion Solenoid Actuator Relay Control | (33) II | (33) — |
| (34) 34 | (34) 0.5 | (34) WH / BU | (34) 2491 | (34) Cylinder Shutoff Solenoid Enable Signal 1 | (34) II | (34) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (35) 35 | (35) 0.5 | (35) WH / YE | (35) 2498 | (35) Cylinder Shutoff Solenoid Enable Signal 8 | (35) II | (35) — |
| (36) 36 | (36) 0.5 | (36) BK / BN | (36) 2752 | (36) Throttle Position Sensor Low Reference | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) BK / GN | (37) 469 | (37) Manifold Absolute Pressure Sensor Low Reference | (37) II | (37) — |
| 38 - 39 | — | — | — | Not Occupied | — | — |
| (40) 40 | (40) 0.5 | (40) BN / BU | (40) 357 | (40) Oil Temperature Sensor Signal | (40) II | (40) — |
| 41 | — | — | — | Not Occupied | — | — |
| (42) 42 | (42) 0.5 | (42) BN | (42) 10515 | (42) Electronic Transmission Range Select Shifter Position Sensor 1 Signal | (42) II | (42) — |
| (43) 43 | (43) 0.5 | (43) BK / GY | (43) 626 | (43) Engine Control Vehicle Sensors Low Reference 1 | (43) II | (43) — |
| (44) 44 | (44) 0.75 | (44) VT / BU | (44) 5292 | (44) Powertrain Main Relay Fused Supply Voltage 3 | (44) II | (44) — |
| (45) 45 | (45) 0.75 | (45) GN | (45) 4803 | (45) Direct Fuel Injector High Voltage Control Cylinder 3 | (45) II | (45) — |
| (46) 46 | (46) 0.75 | (46) GY / BU | (46) 4804 | (46) Direct Fuel Injector High Voltage Control Cylinder 4 | (46) II | (46) — |
| (47) 47 | (47) 0.75 | (47) WH / GN | (47) 4805 | (47) Direct Fuel Injector High Voltage Control Cylinder 5 | (47) II | (47) — |
| (48) 48 | (48) 0.75 | (48) VT / GN | (48) 4806 | (48) Direct Fuel Injector High Voltage Control Cylinder 6 | (48) II | (48) — |
| (49) 49 | (49) 0.75 | (49) BU | (49) 4802 | (49) Direct Fuel Injector High Voltage Control Cylinder 2 | (49) II | (49) — |
| (50) 50 | (50) 0.75 | (50) YE / GY | (50) 4807 | (50) Direct Fuel Injector High Voltage Control Cylinder 7 | (50) II | (50) — |
| (51) 51 | (51) 0.75 | (51) GY | (51) 4808 | (51) Direct Fuel Injector High Voltage Control Cylinder 8 | (51) II | (51) — |
| (52) 52 | (52) 0.75 | (52) BN | (52) 4801 | (52) Direct Fuel Injector High Voltage Control Cylinder 1 | (52) II | (52) — |
| (53) 53 | (53) 0.5 | (53) BU | (53) 5491 | (53) Cylinder Deactivation Solenoid Valve Control 1 | (53) II | (53) — |
| (54) 54 | (54) 0.5 | (54) YE | (54) 5498 | (54) Cylinder Deactivation Solenoid Valve Control 8 | (54) II | (54) — |
| (55) 55 | (55) 0.5 | (55) BN / RD | (55) 2701 | (55) Throttle Position Sensor 5V Reference | (55) II | (55) — |
| (56) 56 | (56) 0.5 | (56) BU / WH | (56) 3630 | (56) Throttle Position Sensor SENT 1 Signal | (56) II | (56) — |
| (57) 57 | (57) 0.5 | (57) GY / RD | (57) 2704 | (57) Manifold Absolute Pressure Sensor 5V Reference | (57) II | (57) — |
| (58) 58 | (58) 0.5 | (58) GN / WH | (58) 432 | (58) Manifold Absolute Pressure Sensor Signal | (58) II | (58) — |
| 59 - 60 | — | — | — | Not Occupied | — | — |
| (61) 61 | (61) 0.5 | (61) BU | (61) 410 | (61) Engine Coolant Temperature Sensor Signal | (61) II | (61) — |
| (62) 62 | (62) 0.5 | (62) GY | (62) 10518 | (62) Electronic Transmission Range Select Shifter Position Sensor 2 Signal | (62) II | (62) — |
| (63) 63 | (63) 0.5 | (63) BU / WH | (63) 2918 | (63) Fuel Rail Pressure Sensor Signal | (63) II | (63) — |
| (64) 64 | (64) 0.5 | (64) GY | (64) 23 | (64) Generator Field Duty Cycle Signal | (64) II | (64) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (65) 65 | (65) 0.75 | (65) GN / GY | (65) 4903 | (65) Direct Fuel Injector High Voltage Supply Cylinder 3 | (65) II | (65) — |
| (66) 66 | (66) 0.75 | (66) BU / WH | (66) 4904 | (66) Direct Fuel Injector High Voltage Supply Cylinder 4 | (66) II | (66) — |
| (67) 67 | (67) 0.75 | (67) GN / WH | (67) 4905 | (67) Direct Fuel Injector High Voltage Supply Cylinder 5 | (67) II | (67) — |
| (68) 68 | (68) 0.75 | (68) VT / GY | (68) 4906 | (68) Direct Fuel Injector High Voltage Supply Cylinder 6 | (68) II | (68) — |
| (69) 69 | (69) 0.75 | (69) BU / GY | (69) 4902 | (69) Direct Fuel Injector High Voltage Supply Cylinder 2 | (69) II | (69) — |
| (70) 70 | (70) 0.75 | (70) WH / YE | (70) 4907 | (70) Direct Fuel Injector High Voltage Supply Cylinder 7 | (70) II | (70) — |
| (71) 71 | (71) 0.75 | (71) GY / WH | (71) 4908 | (71) Direct Fuel Injector High Voltage Supply Cylinder 8 | (71) II | (71) — |
| (72) 72 | (72) 0.75 | (72) BN / WH | (72) 4901 | (72) Direct Fuel Injector High Voltage Supply Cylinder 1 | (72) II | (72) — |
| (73) 73 | (73) 2.5 | (73) BK / WH | (73) 6151 | (73) Engine Control Module Ground | (73) I | (73) — |

## K29FV Front Seat Heater Vent Control Module X1



5035058

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

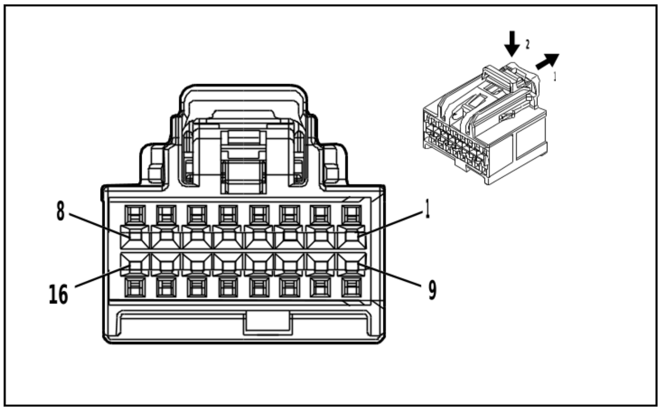
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## K29FV Front Seat Heater Vent Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BN | (1) 2481 | (1) Passenger Seat Back Heating Element Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / BU | (2) 2479 | (2) Passenger Seat Heating Element Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / BK | (3) 2480 | (3) Passenger Seat Heating Element Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BK | (4) 2078 | (4) Driver Seat Heating Element Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BN | (5) 2432 | (5) Driver Seat Back Heating Element Control | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) BN / VT | (6) 2077 | (6) Driver Seat Heating Element Control | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) RD / GN | (7) 6140 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 1.5 | (8) BK | (8) 1250 | (8) Ground | (8) II | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.75 | (10) RD / BN | (10) 6640 | (10) Battery Positive Voltage | (10) II | (10) — |

### K29FV Front Seat Heater Vent Control Module X2



4873243

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35016343
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

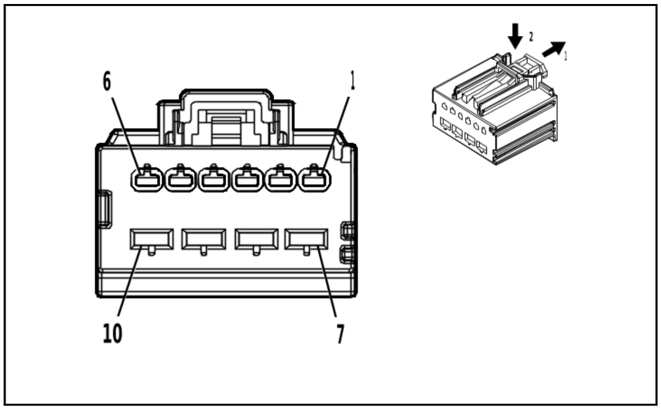
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K29FV Front Seat Heater Vent Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / YE | (1) 2080 | (1) Driver Heated Seat Thermistor Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GY | (2) 2435 | (2) Passenger Heated Seat Thermistor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 2425 | (3) Driver Seat Back Heating Temperature Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / BU | (4) 2436 | (4) Passenger Seat Back Heating Temperature Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GY | (5) 2434 | (5) Passenger Seat Heating Temperature Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / GY | (6) 2079 | (6) Driver Seat Heating Temperature Sensor Signal | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) GN / VT | (8) 2857 | (8) Body Control Module LIN Bus 11 | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GN / VT | (9) 5906 | (9) Driver Seat Blower Motor Control 1 | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) VT / WH | (10) 5908 | (10) Passenger Seat Blower Motor Control 1 | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BK / GN | (12) 2482 | (12) Passenger Heated Back Thermistor Low Reference | (12) I | (12) — |
| 13 - 16 | — | — | — | Not Occupied | — | — |

### K29R Rear Seat Heater Control Module X1 (KA6)



5035058

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Right Cushion
- OEM Connector: 13525907
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

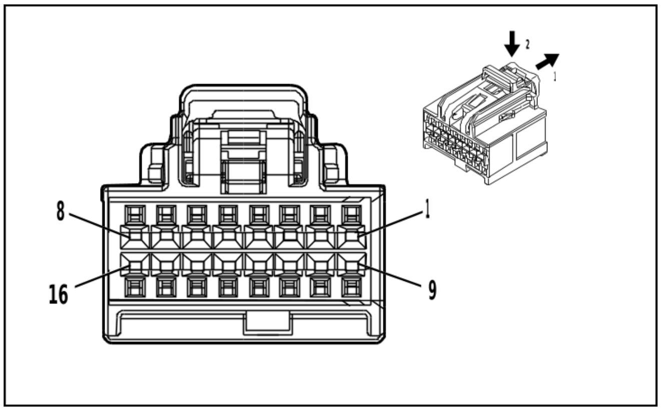
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K29R Rear Seat Heater Control Module X1 (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) — | (2) GN / BN | (2) 2296 | (2) Right Rear Seat Cushion Heating Element Control | (2) I | (2) — |
| (3) 3 | (3) — | (3) GN / BK | (3) 2457 | (3) Right Rear Seat Heating Element Low Reference | (3) I | (3) — |
| (4) 4 | (4) — | (4) BU / BK | (4) 2446 | (4) Left Rear Seat Heating Element Low Reference | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) — | (6) GY | (6) 2294 | (6) Left Rear Seat Cushion Heating Element Control | (6) I | (6) — |
| (7) 7 | (7) — | (7) RD / BU | (7) 6740 | (7) Battery Positive Voltage | (7) I | (7) — |
| (8) 8 | (8) — | (8) BK | (8) 1450 | (8) Ground | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) — | (10) RD / WH | (10) 5740 | (10) Battery Positive Voltage | (10) I | (10) — |

### K29R Rear Seat Heater Control Module X2 (KA6)



4873243

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Right Cushion
- OEM Connector: 13519738
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 0.64 OCS Series( BK)

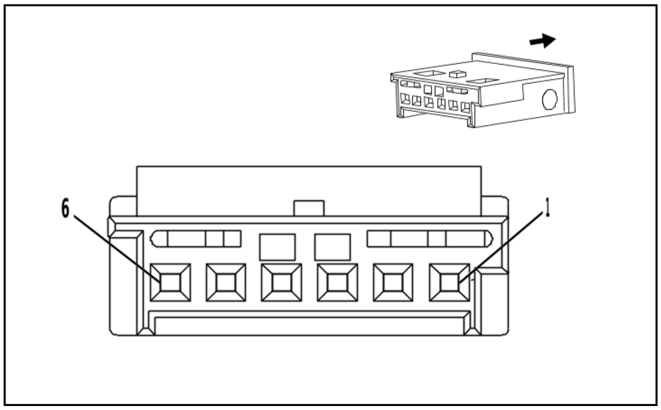
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K29R Rear Seat Heater Control Module X2 (KA6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BU / WH | (1) 7048 | (1) Left Rear Cushion Thermistor Feedback Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) WH / BK | (2) 7054 | (2) Right Rear Cushion Thermistor Feedback Signal | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) — | (5) YE / WH | (5) 7053 | (5) Right Rear Seat Cushion Temperature Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) — | (6) WH / BU | (6) 7047 | (6) Left Rear Seat Cushion Temperature Sensor Signal | (6) I | (6) — |
| (7) 7 | (7) — | (7) BK | (7) 1450 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) — | (8) GN / VT | (8) 2857 | (8) Body Control Module LIN Bus 11 | (8) I | (8) — |
| 9 - 16 | — | — | — | Not Occupied | — | — |

### K32 Heated Steering Wheel Module X1 (KI3 - UKL)



1862024

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 1-1241370-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Micro-Quadlock Series( BK)

## Terminal Part Information

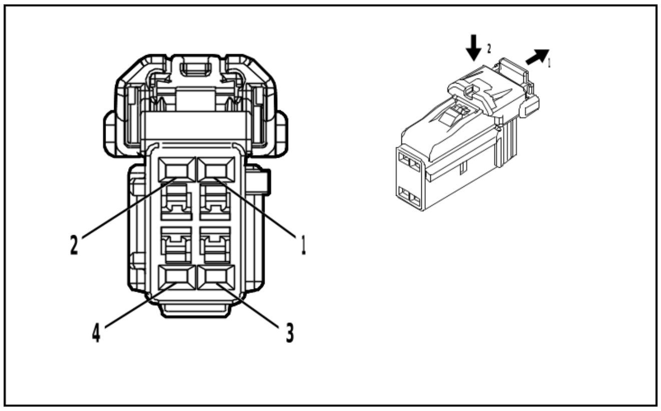
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K32 Heated Steering Wheel Module X1 (KI3 - UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) YE / GY | (1) 5883 | (1) Steering Wheel Heating Switch Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / WH | (2) 5884 | (2) Steering Wheel Heating Switch LED Control | (2) I | (2) — |
| (3) 3 | (3) — | (3) RD / BU | (3) 6040 | (3) Battery Positive Voltage | (3) I | (3) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (4) 4 | (4) — | (4) BK | (4) 6050 | (4) Steering Wheel Ground | (4) I | (4) — |
| (5) 5 | (5) — | (5) BK / WH | (5) 6051 | (5) Steering Wheel Ground | (5) I | (5) — |
| (6) 6 | (6) — | (6) GN / BK | (6) 2858 | (6) Body Control Module LIN Bus 12 | (6) I | (6) — |

**K32 Heated Steering Wheel Module X2 (KI3 - UKL)**



4872683

**Connector Part Information**
- Harness Type: Steering Wheel Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way

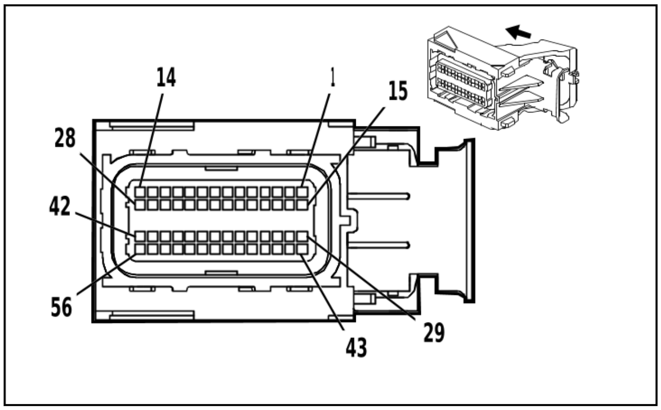
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K32 Heated Steering Wheel Module X2 (KI3 - UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / YE | (1) 5888 | (1) Steering Wheel Heating High Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / YE | (2) 5887 | (2) Steering Wheel Heating Low Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) YE / RD | (3) 5885 | (3) Steering Wheel Heating Voltage Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) VT / BU | (4) 5886 | (4) Steering Wheel Heating Temperature Sensor Signal | (4) I | (4) — |

### K36 Restraints Control Module X1



1590948

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 12728284
- Service Connector: 85090371
- Description: 56-Way F 0.64 MX123 Series, Sealed( BK with BU Terminal Position Assurance)

## Terminal Part Information

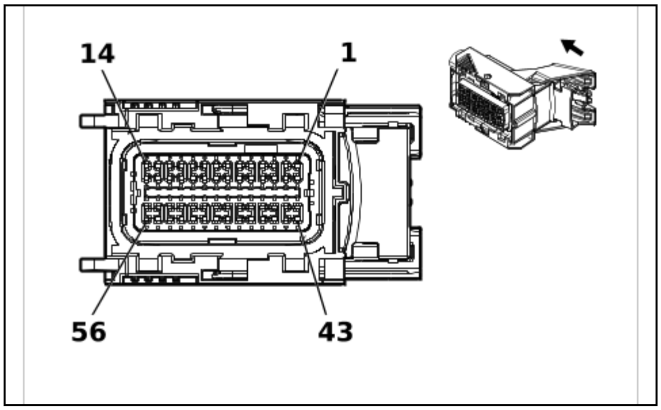
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

## K36 Restraints Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK / OG | (7) 5045 | (7) Left Front Impact Discriminating Sensor Low Reference | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) OG / YE | (8) 354 | (8) Left Front Impact Discriminating Sensor Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) OG / GN | (9) 1409 | (9) Right Front Impact Discriminating Sensor Signal | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / OG | (10) 5600 | (10) Right Front Impact Discriminating Sensor Low Reference | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) WH / OG | (11) 3476 | (11) Passenger Seat Belt Retractor Pretensioner Low Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) OG / GN | (12) 3475 | (12) Passenger Seat Belt Retractor Pretensioner High Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) YE / OG | (13) 3025 | (13) Passenger Instrument Panel Air Bag Stage 1 High Control | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) OG / WH | (14) 3024 | (14) Passenger Instrument Panel Air Bag Stage 1 Low Control | (14) I | (14) — |
| 15 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.5 | (25) VT / OG | (25) 3478 | (25) Driver Seat Belt Retractor Pretensioner Low Control | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) OG / WH | (26) 3477 | (26) Driver Seat Belt Retractor Pretensioner High Control | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) OG / VT | (27) 3021 | (27) Steering Wheel Air Bag Stage 1 High Control | (27) I | (27) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (28) 28 | (28) 0.5 | (28) BN / OG | (28) 3020 | (28) Steering Wheel Air Bag Stage 1 Low Control | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) BU / GN | (29) 4103 | (29) AUTOSAR CAN Bus [+] 9 Serial Data | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) WH / GN | (30) 4102 | (30) AUTOSAR CAN Bus [-] 9 Serial Data | (30) I | (30) — |
| 31 | — | — | — | Not Occupied | — | — |
| (32) 32 | (32) 0.5 | (32) OG / BN | (32) 3479 | (32) Passenger Seat Belt Anchor Pretensioner High Control | (32) I | (32) — |
| (33) 33 | (33) 0.5 | (33) GY / OG | (33) 3480 | (33) Passenger Seat Belt Anchor Pretensioner Low Control | (33) I | (33) — |
| 34 - 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 0.5 | (38) OG / VT | (38) 3026 | (38) Passenger Instrument Panel Air Bag Stage 2 Low Control | (38) I | (38) — |
| (39) 39 | (39) 0.5 | (39) GY / OG | (39) 3027 | (39) Passenger Instrument Panel Air Bag Stage 2 High Control | (39) I | (39) — |
| 40 - 41 | — | — | — | Not Occupied | — | — |
| (42) 42 | (42) 0.75 | (42) BK / WH | (42) 1351 | (42) Signal Ground | (42) I | (42) — |
| (43) 43 | (43) 0.35 | (43) BU / GN | (43) 4103 | (43) AUTOSAR CAN Bus [+] 9 Serial Data | (43) I | (43) — |
| (44) 44 | (44) 0.35 | (44) WH / GN | (44) 4102 | (44) AUTOSAR CAN Bus [-] 9 Serial Data | (44) I | (44) — |
| 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 0.5 | (46) VT / OG | (46) 3482 | (46) Driver Seat Belt Anchor Pretensioner Low Control | (46) I | (46) — |
| (47) 47 | (47) 0.5 | (47) OG / YE | (47) 3481 | (47) Driver Seat Belt Anchor Pretensioner High Control | (47) I | (47) — |
| 48 - 49 | — | — | — | Not Occupied | — | — |
| (50) 50 | (50) 0.5 | (50) BN / WH | (50) 3895 | (50) Roof Rail Air Bag Disable Switch Low Reference | (50) I | (50) — |
| (51) 51 | (51) 0.5 | (51) BU / WH | (51) 3119 | (51) Roof Rail Air Bag Disable Switch Signal | (51) I | (51) — |
| 52 | — | — | — | Not Occupied | — | — |
| (53) 53 | (53) 0.5 | (53) WH / OG | (53) 3022 | (53) Steering Wheel Air Bag Stage 2 Low Control | (53) I | (53) — |
| (54) 54 | (54) 0.5 | (54) OG / GN | (54) 3023 | (54) Steering Wheel Air Bag Stage 2 High Control | (54) I | (54) — |
| (55) 55 | (55) 0.5 | (55) VT / WH | (55) 239 | (55) Run/Crank Ignition 1 Voltage | (55) I | (55) — |
| (56) 56 | (56) 0.5 | (56) RD / GN | (56) 4440 | (56) Battery Positive Voltage | (56) I | (56) — |

### K36 Restraints Control Module X2



5377124

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12728285
- Service Connector: 85004498
- Description: 56-Way F 0.64 MX123 Series, Sealed( BK)

## Terminal Part Information

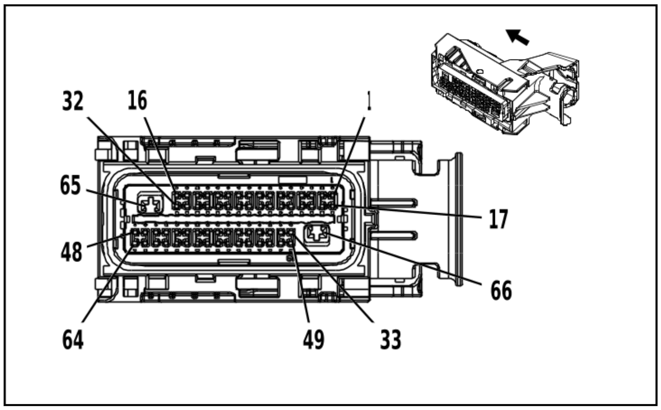
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354746 | J-35616-64B (L-BU) | J-38125-213 |

## K36 Restraints Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) VT / OG | (9) 3517 | (9) 3rd Row Right Seat Belt Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BU / OG | (10) 5163 | (10) Rear Center Seat Belt Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) YE / OG | (11) 5161 | (11) Left Rear Seat Belt Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) OG / GY | (12) 2652 | (12) Driver Seat Belt Sensor Signal | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BK / OG | (13) 6627 | (13) Right Rear Side Impact Sensor Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) OG / WH | (14) 6626 | (14) Right Rear Side Impact Sensor Signal | (14) I | (14) — |
| 15 - 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) OG / GN | (21) 3700 | (21) 3rd Row Center Seat Belt Switch Signal | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) GN / OG | (22) 3516 | (22) 3rd Row Left Seat Belt Switch Signal | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) BK / OG | (23) 1363 | (23) Driver Seat Belt Switch Low Reference | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) BN / OG | (24) 5162 | (24) Right Rear Seat Belt Switch Signal | (24) I | (24) — |
| (25) 25 | (25) 0.5 | (25) OG / VT | (25) 1362 | (25) Passenger Seat Belt Switch Signal | (25) I | (25) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) BK / OG | (27) 6628 | (27) Left Front Side Impact Sensor Low Reference | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) OG / GN | (28) 2132 | (28) Left Front Side Impact Sensor Signal | (28) I | (28) — |
| 29 - 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) OG / GY | (37) 5021 | (37) Right Front Roof Rail Air Bag High Control | (37) I | (37) — |
| (38) 38 | (38) 0.5 | (38) WH / OG | (38) 5022 | (38) Right Front Roof Rail Air Bag Low Control | (38) I | (38) — |
| (39) 39 | (39) 0.5 | (39) BU / OG | (39) 4957 | (39) Passenger Seat Back Air Bag Low Control | (39) I | (39) — |
| (40) 40 | (40) 0.5 | (40) OG / GY | (40) 4956 | (40) Passenger Seat Back Air Bag High Control | (40) I | (40) — |
| (41) 41 | (41) 0.5 | (41) BK / OG | (41) 6629 | (41) Right Front Side Impact Sensor Low Reference | (41) I | (41) — |
| (42) 42 | (42) 0.5 | (42) BN / OG | (42) 2134 | (42) Right Front Side Impact Sensor Signal | (42) I | (42) — |
| 43 - 44 | — | — | — | Not Occupied | — | — |
| (45) 45 | (45) 0.5 | (45) GY / OG | (45) 4208 | (45) Driver Inboard Seat Side Air Bag Low Control | (45) I | (45) — |
| (46) 46 | (46) 0.5 | (46) OG / BN | (46) 4207 | (46) Driver Inboard Seat Side Air Bag High Control | (46) I | (46) — |
| 47 - 50 | — | — | — | Not Occupied | — | — |
| (51) 51 | (51) 0.5 | (51) OG / GN | (51) 5019 | (51) Left Front Roof Rail Air Bag High Control | (51) I | (51) — |
| (52) 52 | (52) 0.5 | (52) VT / OG | (52) 5020 | (52) Left Front Roof Rail Air Bag Low Control | (52) I | (52) — |
| (53) 53 | (53) 0.5 | (53) BK / OG | (53) 4963 | (53) Driver Seat Back Air Bag Low Control | (53) I | (53) — |
| (54) 54 | (54) 0.5 | (54) OG / BU | (54) 4962 | (54) Driver Seat Back Air Bag High Control | (54) I | (54) — |
| (55) 55 | (55) 0.5 | (55) BK / OG | (55) 6623 | (55) Left Rear Side Impact Sensor Low Reference | (55) I | (55) — |
| (56) 56 | (56) 0.5 | (56) OG / BU | (56) 6622 | (56) Left Rear Side Impact Sensor Signal | (56) I | (56) — |

## K38 Chassis Control Module



3621452

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12707495
- Service Connector: 85761018
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed( BK with BK Terminal Position Assurance)

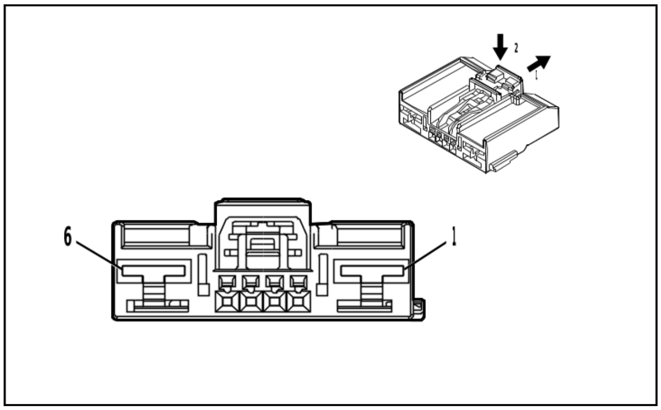
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19351723 | J-35616-64B (L-BU) | J-38125-213 |

### K38 Chassis Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) VT / WH | (6) 639 | (6) Run/Crank Ignition 1 Voltage | (6) II | (6) — |
| 7 - 33 | — | — | — | Not Occupied | — | — |
| (34) 34 | (34) 0.5 | (34) BU / BK | (34) 4977 | (34) AUTOSAR CAN Bus [+] 3 Serial Data | (34) II | (34) — |
| (35) 35 | (35) 0.5 | (35) BU / BK | (35) 4977 | (35) AUTOSAR CAN Bus [+] 3 Serial Data | (35) II | (35) — |
| (36) 36 | (36) 0.5 | (36) WH | (36) 4976 | (36) AUTOSAR CAN Bus [-] 3 Serial Data | (36) II | (36) — |
| (37) 37 | (37) 0.5 | (37) WH | (37) 4976 | (37) AUTOSAR CAN Bus [-] 3 Serial Data | (37) II | (37) — |
| 38 - 64 | — | — | — | Not Occupied | — | — |
| (65) 65 | (65) 0.5 | (65) BK | (65) 2050 | (65) Ground | (65) I | (65) — |
| (66) 66 | (66) 0.5 | (66) RD / GN | (66) 2642 | (66) Battery Positive Voltage | (66) I | (66) — |

## K40D Driver Seat Adjuster Memory Module X1



4650258

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-7139-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64, 6.3 Series( BK)

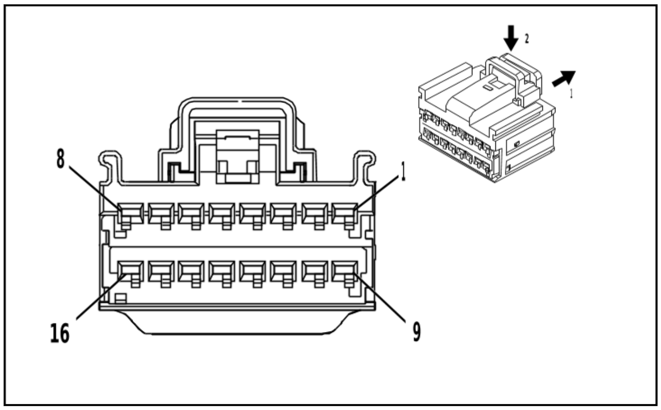
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

### K40D Driver Seat Adjuster Memory Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1150 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) RD / BN | (3) 2240 | (3) Battery Positive Voltage | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 2.5 | (6) RD / YE | (6) 5040 | (6) Battery Positive Voltage | (6) I | (6) — |

### K40D Driver Seat Adjuster Memory Module X2



4332214

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 15512506
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 OCS Series( BK)

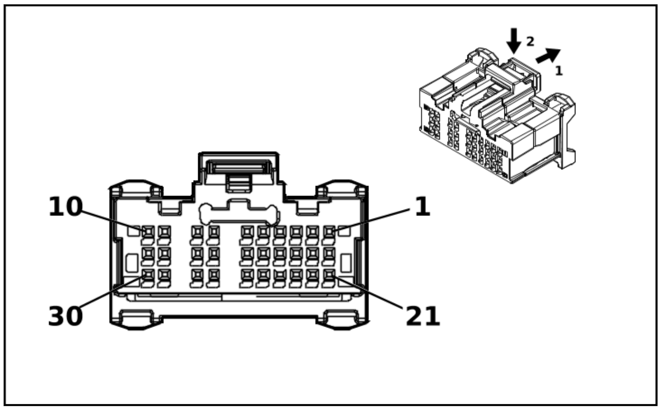
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## K40D Driver Seat Adjuster Memory Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) YE / BU | (1) 285 | (1) Driver Seat Horizontal Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / YE | (3) 276 | (3) Driver Seat Recline Motor Forward Control | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 1.5 | (6) BU / VT | (6) 287 | (6) Driver Seat Front Vertical Motor Down Control | (6) I | (6) — |
| (7) 7 | (7) 1.5 | (7) YE | (7) 282 | (7) Driver Seat Rear Vertical Motor Up Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 1.5 | (9) BU / YE | (9) 277 | (9) Driver Seat Recline Motor Rearward Control | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 1.5 | (11) GY / GN | (11) 284 | (11) Driver Seat Horizontal Motor Rearward Control | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 1.5 | (13) GY / BU | (13) 283 | (13) Driver Seat Rear Vertical Motor Down Control | (13) I | (13) — |
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 1.5 | (16) GN / BN | (16) 286 | (16) Driver Seat Front Vertical Motor Up Control | (16) I | (16) — |

## K40D Driver Seat Adjuster Memory Module X3



5202284

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2309644-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 0.5 MQS Series( BK)

## Terminal Part Information

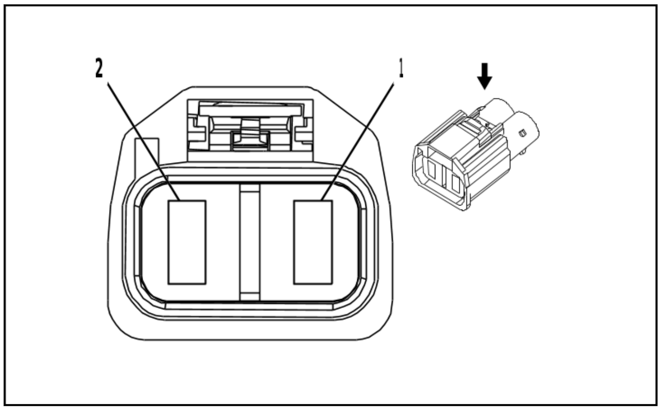
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K40D Driver Seat Adjuster Memory Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) BU / GN | (2) 614 | (2) Seat Memory Switch Set Signal | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BN | (5) 3038 | (5) Driver Seat Right Rear Haptic Movement Motor Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / BN | (6) 3037 | (6) Driver Seat Left Rear Haptic Movement Motor Control | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) GN / WH | (8) 7530 | (8) Driver Seat Adjuster Memory Module LIN Bus 1 | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4100 | (9) AUTOSAR CAN Bus [-] 4 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / VT | (10) 4101 | (10) AUTOSAR CAN Bus [+] 4 Serial Data | (10) I | (10) — |
| 11 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 615 | (16) Seat Memory Switch Signal 1 | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) GN / GY | (18) 3758 | (18) Driver Seat Adjuster Memory Module LIN Bus 2 | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) WH | (19) 4100 | (19) AUTOSAR CAN Bus [-] 4 Serial Data | (19) I | (19) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (20) 20 | (20) 0.35 | (20) BU / VT | (20) 4101 | (20) AUTOSAR CAN Bus [+] 4 Serial Data | (20) I | (20) — |
| 21 - 30 | — | — | — | Not Occupied | — | — |

### K43 Power Steering Control Module X1



2748050

**Connector Part Information**

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: 13581053
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 9.5 Series, Sealed( BK)

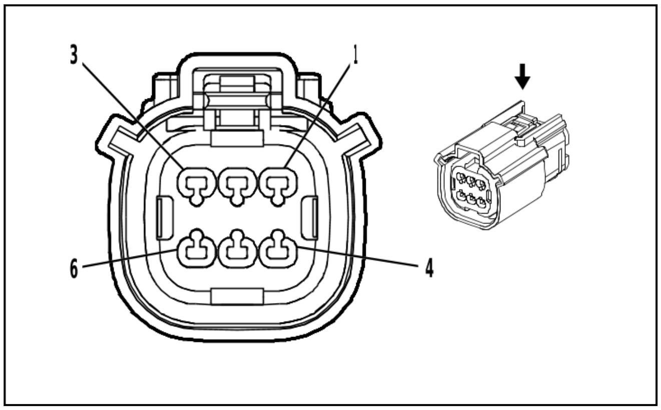
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K43 Power Steering Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 25 | (1) BK | (1) 350 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 25 | (2) RD / VT | (2) 842 | (2) Battery Positive Voltage | (2) I | (2) — |

## K43 Power Steering Control Module X2



1986157

**Connector Part Information**

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: 33472-0674
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.5 MX Series, Sealed( BK)

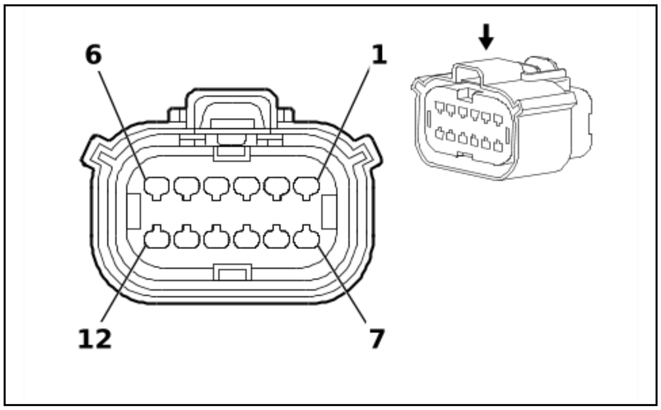
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### K43 Power Steering Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4978 | (1) AUTOSAR CAN Bus [-] 2 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / YE | (2) 4979 | (2) AUTOSAR CAN Bus [+] 2 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

### K43 Power Steering Control Module X3



1825165

**Connector Part Information**

- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: 13503528
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

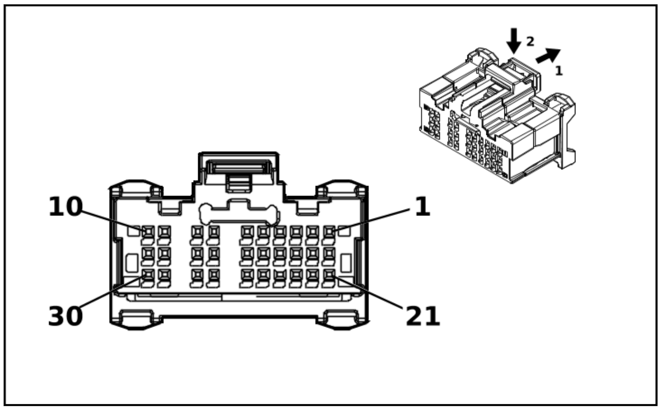
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## K43 Power Steering Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 8369 | (1) Handwheel Channel A Angle Position Sensor SENT Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / BU | (2) 8366 | (2) Handwheel Channel A High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GY | (3) 8370 | (3) Handwheel Channel A Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 8375 | (4) Handwheel Channel B Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) VT | (5) 8371 | (5) Handwheel Channel B High Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) OG | (6) 8374 | (6) Handwheel Channel B Angle Position Sensor SENT Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / RD | (7) 8367 | (7) Handwheel Channel A Torque Pressure Sensor 1 SENT Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) GN | (8) 8368 | (8) Handwheel Channel A Torque Pressure Sensor 2 SENT Signal | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) RD | (11) 8372 | (11) Handwheel Channel B Torque Pressure Sensor 1 SENT Signal | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BU | (12) 8373 | (12) Handwheel Channel B Torque Pressure Sensor 2 SENT Signal | (12) I | (12) — |

### K56 Serial Data Gateway Module X1



5202284

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-1
- Service Connector: 84766507
- Description: 30-Way F 0.5 MQS Series( BK)

## Terminal Part Information

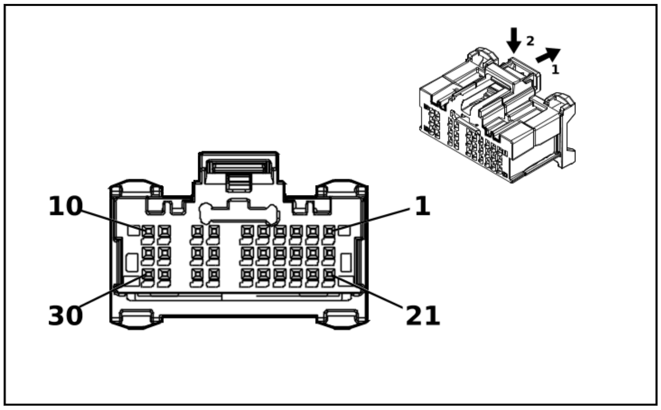
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## K56 Serial Data Gateway Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 3340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU / GY | (2) 4105 | (2) AUTOSAR CAN Bus [+] 8 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH / GY | (3) 4104 | (3) AUTOSAR CAN Bus [-] 8 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK | (4) 1050 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU | (5) 4987 | (5) AUTOSAR CAN Bus [+] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 4100 | (7) AUTOSAR CAN Bus [-] 4 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / VT | (8) 4101 | (8) AUTOSAR CAN Bus [+] 4 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4976 | (9) AUTOSAR CAN Bus [-] 3 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / BK | (10) 4977 | (10) AUTOSAR CAN Bus [+] 3 Serial Data | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) WH / GY | (13) 4104 | (13) AUTOSAR CAN Bus [-] 8 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BU / GY | (14) 4105 | (14) AUTOSAR CAN Bus [+] 8 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) BU | (15) 4987 | (15) AUTOSAR CAN Bus [+] 1 Serial Data | (15) I | (15) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.35 | (16) WH | (16) 4986 | (16) AUTOSAR CAN Bus [-] 1 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) WH | (17) 4978 | (17) AUTOSAR CAN Bus [-] 2 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / YE | (18) 4979 | (18) AUTOSAR CAN Bus [+] 2 Serial Data | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) BU / YE | (19) 4984 | (19) AUTOSAR CAN Bus [-] 5 Serial Data | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BU / WH | (20) 4985 | (20) AUTOSAR CAN Bus [+] 5 Serial Data | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) BN / WH | (21) 7209 | (21) Ethernet Bus 3 [+] | (21) II | (21) — |
| (22) 22 | (22) 0.35 | (22) BN | (22) 7208 | (22) Ethernet Bus 3 [-] | (22) II | (22) — |
| 23 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.35 | (25) BU | (25) 4987 | (25) AUTOSAR CAN Bus [+] 1 Serial Data | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) WH | (26) 4986 | (26) AUTOSAR CAN Bus [-] 1 Serial Data | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) WH | (27) 4978 | (27) AUTOSAR CAN Bus [-] 2 Serial Data | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) BU / YE | (28) 4979 | (28) AUTOSAR CAN Bus [+] 2 Serial Data | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) WH / GY | (29) 4104 | (29) AUTOSAR CAN Bus [-] 8 Serial Data | (29) I | (29) — |
| (30) 30 | (30) 0.35 | (30) BU / GY | (30) 4105 | (30) AUTOSAR CAN Bus [+] 8 Serial Data | (30) I | (30) — |

### K56 Serial Data Gateway Module X2



5203942

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-2
- Service Connector: 84766509
- Description: 30-Way F 0.5 MQS Series( BK with L-GY Front Housing)

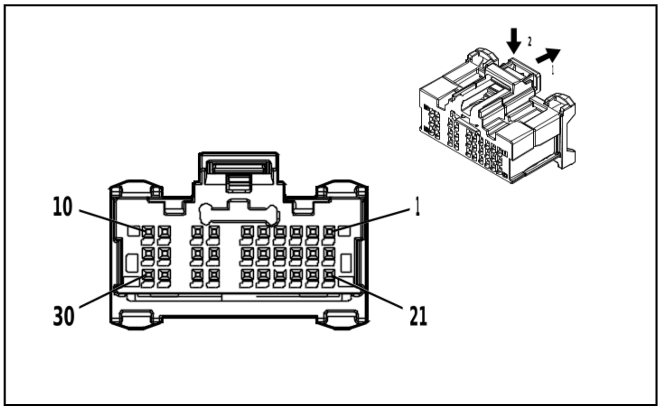
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## K56 Serial Data Gateway Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BK / GY | (5) 3559 | (5) Passive Start Switch 2 Low Reference | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) GN / VT | (7) 5199 | (7) Run/Crank Relay Coil Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) YE / WH | (9) 4973 | (9) Ethernet Bus 1R [+] | (9) II | (9) — |
| (10) 10 | (10) 0.35 | (10) YE | (10) 4972 | (10) Ethernet Bus 1R [-] | (10) II | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) BU / BN | (13) 4983 | (13) AUTOSAR CAN Bus [+] 7 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 4982 | (14) AUTOSAR CAN Bus [-] 7 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GN / BK | (15) 3558 | (15) Passive Start Switch Signal 2 | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 4980 | (16) AUTOSAR CAN Bus [-] 6 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GN | (17) 2578 | (17) Private Serial Data Presentation CAN Bus [+] 1 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BN | (18) 2577 | (18) Private Serial Data Presentation CAN Bus [-] 1 Serial Data | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) WH | (19) 7207 | (19) Ethernet Bus 1 Enable Signal | (19) I | (19) — |
| 20 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.35 | (23) BU / WH | (23) 4985 | (23) AUTOSAR CAN Bus [+] 5 Serial Data | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) BU / YE | (24) 4984 | (24) AUTOSAR CAN Bus [-] 5 Serial Data | (24) I | (24) — |
| 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 0.35 | (26) YE | (26) 4981 | (26) AUTOSAR CAN Bus [+] 6 Serial Data | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) VT | (27) 2580 | (27) Private Serial Data Presentation CAN Bus [+] 2 Serial Data | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) GY | (28) 2579 | (28) Private Serial Data Presentation CAN Bus [-] 2 Serial Data | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) GN / WH | (29) 4975 | (29) Ethernet Bus 1T [+] | (29) II | (29) — |
| (30) 30 | (30) 0.35 | (30) GN | (30) 4974 | (30) Ethernet Bus 1T [-] | (30) II | (30) — |

### K56 Serial Data Gateway Module X3



4900333

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2309644-3
- Service Connector: 13519319
- Description: 30-Way F 0.5 MQS Series( BK with D-GY Front Housing)

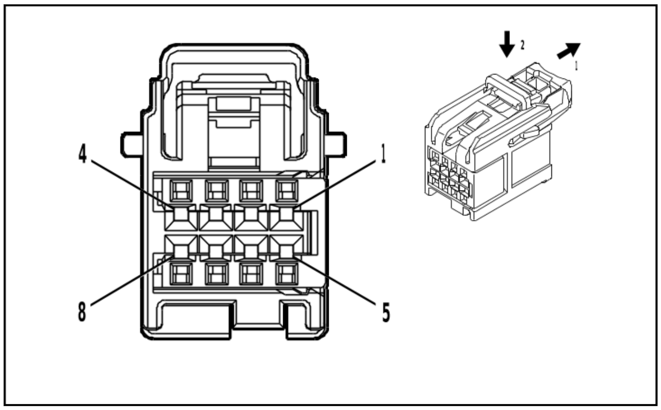
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | Service by Cable | EL-35616-58 (BK) | EL-38125-58 |

## K56 Serial Data Gateway Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / GN | (1) 4103 | (1) AUTOSAR CAN Bus [+] 9 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / GN | (2) 4102 | (2) AUTOSAR CAN Bus [-] 9 Serial Data | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) BU | (5) 4987 | (5) AUTOSAR CAN Bus [+] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BU / WH | (7) 4758 | (7) Ethernet Bus 2 [+] | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) BU | (8) 4757 | (8) Ethernet Bus 2 [-] | (8) II | (8) — |
| 9 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.35 | (25) BU / YE | (25) 4979 | (25) AUTOSAR CAN Bus [+] 2 Serial Data | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) WH | (26) 4978 | (26) AUTOSAR CAN Bus [-] 2 Serial Data | (26) I | (26) — |
| 27 - 30 | — | — | — | Not Occupied | — | — |

## K56U Special Purpose Vehicle Control Module (KGU)



4935776

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series( BK)

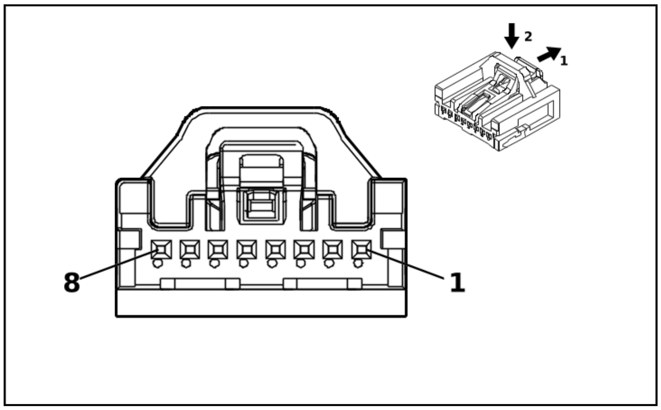
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K56U Special Purpose Vehicle Control Module (KGU)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / VT | (1) 14240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU | (2) 4987 | (2) AUTOSAR CAN Bus [+] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH | (3) 4986 | (3) AUTOSAR CAN Bus [-] 1 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BK | (4) 8950 | (4) Upfitter Vehicle Module Ground | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) BU | (6) 4987 | (6) AUTOSAR CAN Bus [+] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4986 | (7) AUTOSAR CAN Bus [-] 1 Serial Data | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

## K60 Column Lock Module



5200269

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068228
- Service Connector: 84769201
- Description: 8-Way F Mini 50 Series( BK)

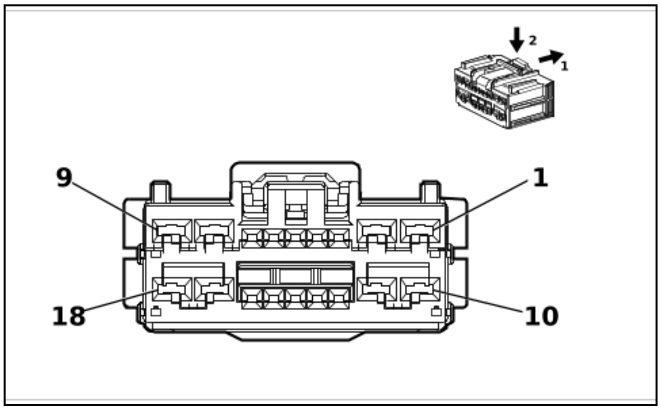
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K60 Column Lock Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / WH | (1) 6440 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 4987 | (4) AUTOSAR CAN Bus [+] 1 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU | (5) 4987 | (5) AUTOSAR CAN Bus [+] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH | (6) 4986 | (6) AUTOSAR CAN Bus [-] 1 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 4986 | (7) AUTOSAR CAN Bus [-] 1 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / VT | (8) 807 | (8) Ignition Off/Accessory Ignition Voltage | (8) I | (8) — |

### K61 Sunroof Control Module



5671221

**Connector Part Information**
- Harness Type: Sunroof Wiring Harness
- OEM Connector: 7289-9550-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 18-Way F 0.64 GEN-Y, 2.8 YESC Series( BK)

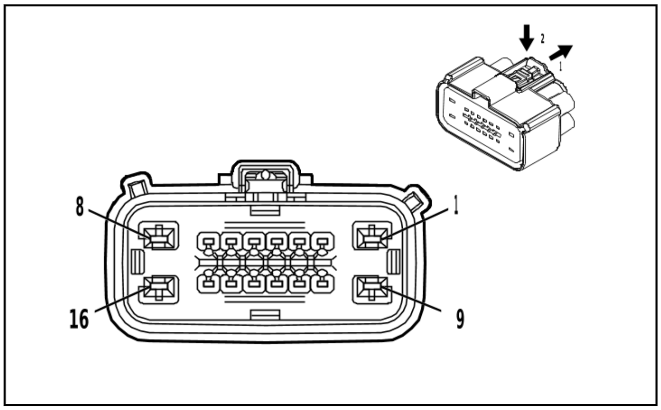
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## K61 Sunroof Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 2 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |
| 3 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BU | (7) 2854 | (7) Body Control Module LIN Bus 8 | (7) II | (7) — |
| (8) 8 | (8) 2 | (8) BN | (8) 1850 | (8) Ground | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 2 | (10) OG | (10) 4540 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 2 | (11) RD | (11) 4540 | (11) Battery Positive Voltage | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BK / BN | (12) 128 | (12) Sunroof Switch Low Reference | (12) II | (12) — |
| (13) 13 | (13) 0.35 | (13) RD / WH | (13) 5033 | (13) Sunroof Obstruction Sensor Voltage Reference | (13) II | (13) — |
| (14) 14 | (14) 0.35 | (14) VT | (14) 5124 | (14) Sunroof Obstruction Sensor Signal 2 | (14) II | (14) — |
| (15) 15 | (15) 0.35 | (15) YE | (15) 5034 | (15) Sunroof Obstruction Sensor Signal 1 | (15) II | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 1.5 | (17) BU | (17) 3782 | (17) Front Sunshade Motor Close Control | (17) I | (17) — |
| (18) 18 | (18) 1.5 | (18) PK | (18) 3781 | (18) Front Sunroof Sunshade Motor Open Control | (18) I | (18) — |

## K67 Trailer Brake Control Module (JL1)



4624589

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34985-4016
- Service Connector: 13599889
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed( GY)

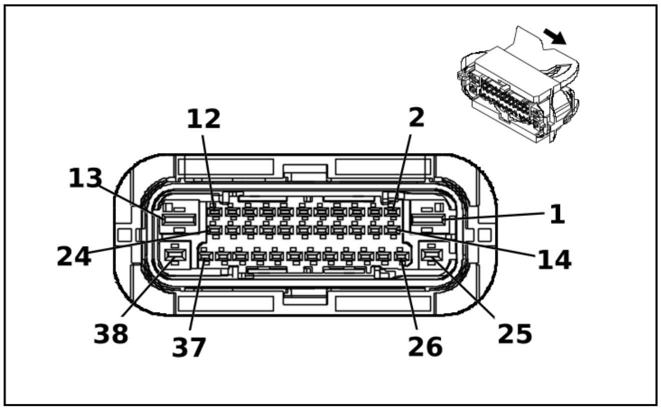
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13576377 | J-35616-35 (VT) | J-38125-12A |
| II | 85528055 | J-35616-2A (GY) | J-38125-217 |

### K67 Trailer Brake Control Module (JL1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) RD / VT | (1) 1242 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) WH / BK | (2) 2223 | (2) Trailer Brake Apply Signal | (2) II | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 1.5 | (5) YE / BK | (5) 2224 | (5) Trailer Brake Enable Signal | (5) II | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 2.5 | (8) BU | (8) 47 | (8) Trailer Auxiliary Control | (8) I | (8) — |
| (9) 9 | (9) 2.5 | (9) BK | (9) 1950 | (9) Ground | (9) I | (9) — |
| 10 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.75 | (12) GN / BU | (12) 2733 | (12) Brake System Control Module LIN Bus 2 | (12) II | (12) — |
| 13 - 16 | — | — | — | Not Occupied | — | — |

### K68 Trailer Lamp Control Module



5199340

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 35497867
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

## Terminal Part Information

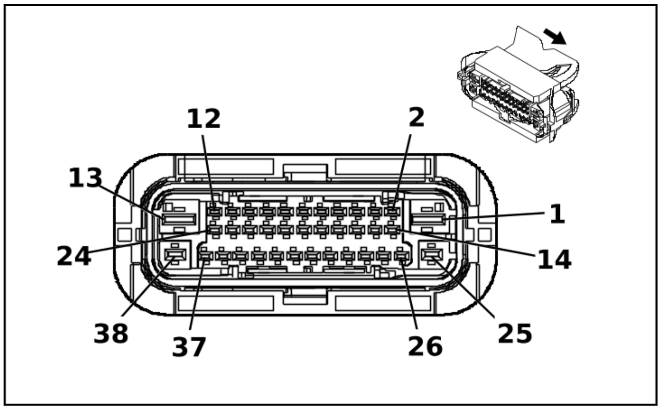
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K68 Trailer Lamp Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) RD / VT | (1) 5640 | (1) Battery Positive Voltage | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / WH | (2) 5186 | (2) Left Trailer Turn Signal Lamp Control | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) YE / GY | (3) 5187 | (3) Right Trailer Turn Signal Lamp Control | (3) II | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) GN / WH | (7) 5189 | (7) Trailer Backup Lamp Control | (7) II | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.75 | (10) VT / BK | (10) 339 | (10) Run/Crank Ignition 1 Voltage | (10) II | (10) — |
| (11) 11 | (11) 0.75 | (11) BN / YE | (11) 820 | (11) Center High Mounted Stop Lamp Supply Voltage | (11) II | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 2.5 | (13) BK | (13) 2050 | (13) Ground | (13) III | (13) — |
| 14 - 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.75 | (25) BN / GY | (25) 5184 | (25) Left Trailer Park Lamp Control | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) BU | (27) 4101 | (27) AUTOSAR CAN Bus [+] 4 Serial Data | (27) II | (27) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (28) 28 | (28) 0.5 | (28) WH / GN | (28) 4100 | (28) AUTOSAR CAN Bus [-] 4 Serial Data | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / VT | (29) 4101 | (29) AUTOSAR CAN Bus [+] 4 Serial Data | (29) II | (29) — |
| (30) 30 | (30) 0.5 | (30) WH | (30) 4100 | (30) AUTOSAR CAN Bus [-] 4 Serial Data | (30) II | (30) — |
| 31 - 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2 | (38) RD / YE | (38) 5840 | (38) Battery Positive Voltage | (38) I | (38) — |

### K69 Transfer Case Control Module (NP0 / NQH)



5199340

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35740703
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

## Terminal Part Information

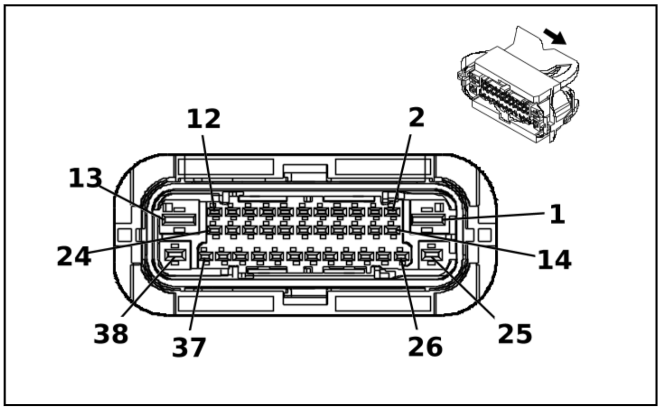
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

## K69 Transfer Case Control Module (NP0 / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / GY | (1) 1342 | (1) Battery Positive Voltage | (1) III | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 7479 | (5) Rotary Position Sensor Signal | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) YE | (7) 7474 | (7) Incremental Encoder Direction Signal | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE / WH | (9) 1695 | (9) 4WD Locked Range Indicator Control | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) VT / GY | (11) 8017 | (11) Secondary Axle Motor Relay Control | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) GY / BK | (12) 1570 | (12) Front Axle Actuator Control | (12) II | (12) — |
| (13) 13 | (13) 2.5 | (13) YE / VT | (13) 1553 | (13) Transfer Case Motor Counter Clockwise Control | (13) III | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.5 | (15) BU / YE | (15) 4979 | (15) AUTOSAR CAN Bus [+] 2 Serial Data | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) WH | (16) 4978 | (16) AUTOSAR CAN Bus [-] 2 Serial Data | (16) II | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) VT / BK | (18) 2139 | (18) Run/Crank Ignition 1 Voltage | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) BU / GY | (19) 7473 | (19) Incremental Encoder Impulse Signal | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) WH / RD | (20) 7477 | (20) Gear Position Sensor 5V Reference | (20) II | (20) — |
| 21 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) BK | (24) 8015 | (24) Transfer Case Motor Low Reference | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) BK | (25) 6550 | (25) Ground | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) BK | (27) 8014 | (27) Transfer Case Lock Solenoid Low Reference | (27) II | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) YE / BK | (30) 7478 | (30) Gear Position Sensor Low Reference | (30) II | (30) — |
| (31) 31 | (31) 0.5 | (31) WH / GN | (31) 7475 | (31) Incremental Encoder Sensor Voltage Reference | (31) II | (31) — |
| 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) BU | (33) 8013 | (33) Transfer Case Lock Solenoid Control 2 | (33) II | (33) — |
| (34) 34 | (34) 0.5 | (34) YE / BN | (34) 1569 | (34) Transfer Case Lock Solenoid Valve Control | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) VT | (36) 7476 | (36) Incremental Encoder Sensor Low Reference | (36) II | (36) — |
| 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2.5 | (38) YE / GY | (38) 1552 | (38) Transfer Case Motor Clockwise Control | (38) I | (38) — |

## K69 Transfer Case Control Module (NPO / NQH)



5199340

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35497867
- Service Connector: 86825458
- Description: 38-Way F 1.5, 2.8, 4.8 MCP Series, Sealed( BK with BN Inner Connector)

### Terminal Part Information

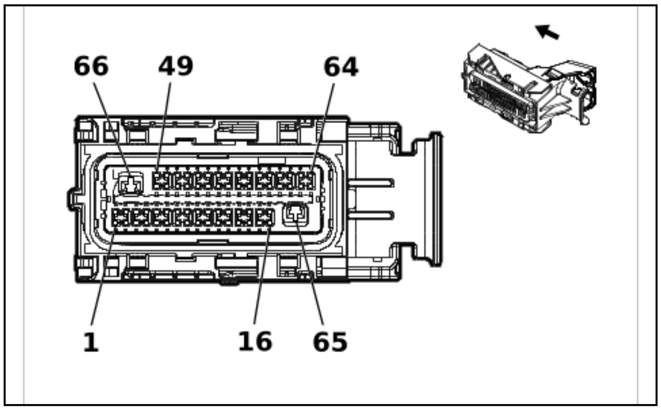
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | 85158596 | J-35616-40 (BU) | J-38125-556 |

### K69 Transfer Case Control Module (NPO / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / GY | (1) 1342 | (1) Battery Positive Voltage | (1) III | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / GN | (5) 7479 | (5) Rotary Position Sensor Signal | (5) II | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) YE | (7) 7474 | (7) Incremental Encoder Direction Signal | (7) II | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) YE / WH | (9) 1695 | (9) 4WD Locked Range Indicator Control | (9) II | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) VT / GY | (11) 8017 | (11) Secondary Axle Motor Relay Control | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) GY / BK | (12) 1570 | (12) Front Axle Actuator Control | (12) II | (12) — |
| (13) 13 | (13) 2.5 | (13) YE / VT | (13) 1553 | (13) Transfer Case Motor Counter Clockwise Control | (13) III | (13) — |
| 14 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (15) 15 | (15) 0.5 | (15) BU / YE | (15) 4979 | (15) AUTOSAR CAN Bus [+] 2 Serial Data | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) WH | (16) 4978 | (16) AUTOSAR CAN Bus [-] 2 Serial Data | (16) II | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) VT / BK | (18) 2139 | (18) Run/Crank Ignition 1 Voltage | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) BU / GY | (19) 7473 | (19) Incremental Encoder Impulse Signal | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) WH / RD | (20) 7477 | (20) Gear Position Sensor 5V Reference | (20) II | (20) — |
| 21 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) BK | (24) 8015 | (24) Transfer Case Motor Low Reference | (24) II | (24) — |
| (25) 25 | (25) 2.5 | (25) BK | (25) 6550 | (25) Ground | (25) I | (25) — |
| 26 | — | — | — | Not Occupied | — | — |
| (27) 27 | (27) 0.5 | (27) BK | (27) 8014 | (27) Transfer Case Lock Solenoid Low Reference | (27) II | (27) — |
| 28 - 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) YE / BK | (30) 7478 | (30) Gear Position Sensor Low Reference | (30) II | (30) — |
| (31) 31 | (31) 0.5 | (31) WH / GN | (31) 7475 | (31) Incremental Encoder Sensor Voltage Reference | (31) II | (31) — |
| 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) BU | (33) 8013 | (33) Transfer Case Lock Solenoid Control 2 | (33) II | (33) — |
| (34) 34 | (34) 0.5 | (34) YE / BN | (34) 1569 | (34) Transfer Case Lock Solenoid Valve Control | (34) II | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 0.5 | (36) VT | (36) 7476 | (36) Incremental Encoder Sensor Low Reference | (36) II | (36) — |
| 37 | — | — | — | Not Occupied | — | — |
| (38) 38 | (38) 2.5 | (38) YE / GY | (38) 1552 | (38) Transfer Case Motor Clockwise Control | (38) I | (38) — |

## K71 Transmission Control Module



6608989

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 12707497
- Service Connector: 85786014
- Description: 66-Way F 0.64, 2.8 MX123 Series, Sealed( BK with BK Terminal Position Assurance)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13587518 | J-35616-35 (VT) | J-38125-11A |
| II | 19351723 | J-35616-64B (L-BU) | J-38125-213 |

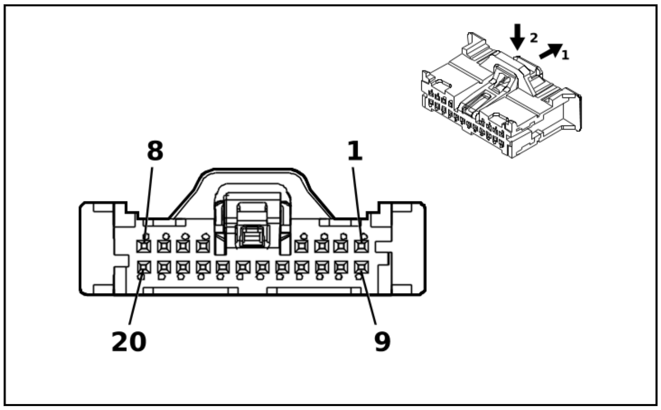
### K71 Transmission Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 422 | (1) Torque Converter Clutch Solenoid Valve Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / GN | (2) 6403 | (2) Clutch Solenoid Valve D Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / BU | (3) 4507 | (3) Transmission Clutch H Control | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4508 | (4) Transmission Clutch G Control | (4) II | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) YE / GN | (7) 4170 | (7) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) YE / BU | (8) 4171 | (8) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (8) II | (8) — |
| 9 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) GN / YE | (12) 6353 | (12) Input Speed Signal | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) GN / VT | (13) 4510 | (13) Transmission Intermediate Speed Signal | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) GY / BU | (14) 6358 | (14) Output Speed Signal | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) BN / BU | (15) 6254 | (15) Transmission Input Speed Sensor Signal | (15) II | (15) — |
| 16 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.5 | (17) GN / WH | (17) 1530 | (17) Transmission Line Pressure Control Solenoid Valve Control | (17) II | (17) — |
| (18) 18 | (18) 0.5 | (18) YE / BN | (18) 6404 | (18) Clutch Solenoid Valve E Control | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) GY | (19) 6402 | (19) Clutch Solenoid Valve C Control | (19) II | (19) — |
| (20) 20 | (20) 0.5 | (20) VT | (20) 4509 | (20) Transmission Clutch F Control | (20) II | (20) — |
| (21) 21 | (21) 0.5 | (21) YE | (21) 2159 | (21) Park Inhibit Solenoid Assembly Control | (21) II | (21) — |
| (22) 22 | (22) 0.5 | (22) GN / BK | (22) 7819 | (22) Default Disable Solenoid Control | (22) II | (22) — |
| 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 0.5 | (24) GN | (24) 2968 | (24) Transmission Auxiliary Fluid Pump Control | (24) II | (24) — |
| 25 - 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) BK / BN | (28) 586 | (28) Transmission Fluid Temperature Sensor Low Reference | (28) II | (28) — |
| 29 - 30 | — | — | — | Not Occupied | — | — |
| (31) 31 | (31) 0.75 | (31) GN / VT | (31) 4621 | (31) Engine Control Module LIN Bus 1 | (31) II | (31) — |
| 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.5 | (33) GN / GY | (33) 6387 | (33) Transmission High Side Driver 1 Control | (33) II | (33) — |
| 34 | — | — | — | Not Occupied | — | — |
| (35) 35 | (35) 0.5 | (35) VT / BK | (35) 2139 | (35) Run/Crank Ignition 1 Voltage | (35) II | (35) — |
| 36 | — | — | — | Not Occupied | — | — |
| (37) 37 | (37) 0.5 | (37) BU / YE | (37) 4979 | (37) AUTOSAR CAN Bus [+] 2 Serial Data | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) WH | (38) 4978 | (38) AUTOSAR CAN Bus [-] 2 Serial Data | (38) II | (38) — |
| 39 - 48 | — | — | — | Not Occupied | — | — |
| (49) 49 | (49) 0.5 | (49) GY / BN | (49) 6388 | (49) Transmission High Side Driver 2 Control | (49) II | (49) — |
| 50 - 52 | — | — | — | Not Occupied | — | — |
| (53) 53 | (53) 0.5 | (53) BU / YE | (53) 4979 | (53) AUTOSAR CAN Bus [+] 2 Serial Data | (53) II | (53) — |
| (54) 54 | (54) 0.5 | (54) WH | (54) 4978 | (54) AUTOSAR CAN Bus [-] 2 Serial Data | (54) II | (54) — |
| 55 - 58 | — | — | — | Not Occupied | — | — |
| (59) 59 | (59) 0.5 | (59) VT / WH | (59) 6319 | (59) Electronic Transmission Range Select Out of Park Switch 2 Signal | (59) II | (59) — |
| 60 | — | — | — | Not Occupied | — | — |
| (61) 61 | (61) 0.5 | (61) WH / YE | (61) 6317 | (61) Electronic Transmission Range Select Out of Park Switch Signal | (61) II | (61) — |
| (62) 62 | (62) 0.5 | (62) BN | (62) 3706 | (62) Electronic Transmission Range Select Switch Analog Signal 1 | (62) II | (62) — |
| (63) 63 | (63) 0.5 | (63) BN / WH | (63) 585 | (63) Transmission Fluid Temperature Sensor Signal | (63) II | (63) — |
| 64 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (65) 65 | (65) 1 | (65) BK / WH | (65) 6151 | (65) Engine Control Module Ground | (65) I | (65) — |
| (66) 66 | (66) 1 | (66) RD / GN | (66) 1840 | (66) Battery Positive Voltage | (66) I | (66) — |

### K73 Telematic Control Module X1



5200955

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068196
- Service Connector: 84769280
- Description: 20-Way F Mini 50 Series( BK)

## Terminal Part Information

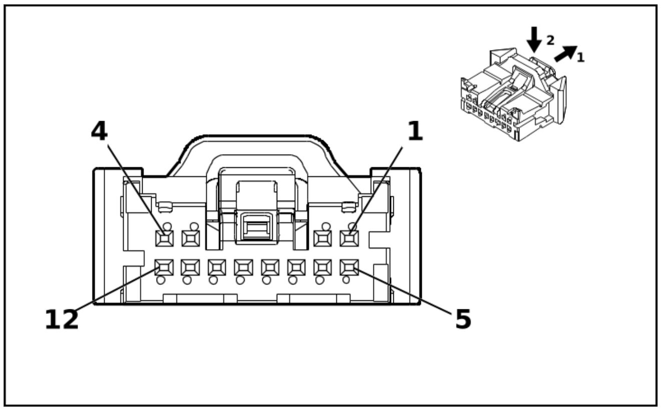
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84944580 | EL-35616-58 (BK) | EL-38125-58 |

## K73 Telematic Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / BU | (1) 3240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) GN / BK | (3) 2515 | (3) Telematics Switch Supply Voltage | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / WH | (4) 2514 | (4) Telematics Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE / VT | (5) 2516 | (5) Telematics Switch Green LED Indicator Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / WH | (6) 2517 | (6) Telematics Switch Red LED Indicator Control | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BU / WH | (7) 4985 | (7) AUTOSAR CAN Bus [+] 5 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / WH | (9) 1451 | (9) Signal Ground | (9) I | (9) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 10 - 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) BU / WH | (19) 4985 | (19) AUTOSAR CAN Bus [+] 5 Serial Data | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BU / YE | (20) 4984 | (20) AUTOSAR CAN Bus [-] 5 Serial Data | (20) I | (20) — |

### K73 Telematic Control Module X2



5360826

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 35068239
- Service Connector: 13529935
- Description: 12-Way F 050 CTS Series( BK)

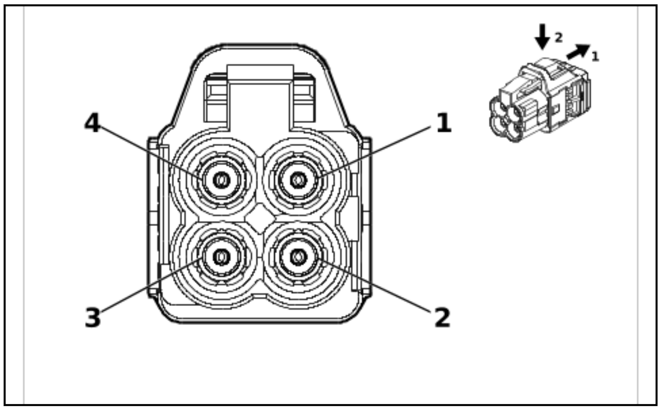
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84944580 | EL-35616-58 (BK) | EL-38125-58 |

## K73 Telematic Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / GN | (1) 4770 | (1) Emergency Call Backup Speaker [+] Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / BK | (2) 4769 | (2) Emergency Call Backup Speaker [-] Control | (2) I | (2) — |
| 3 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) BU | (8) 655 | (8) Cellular Telephone Microphone Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / BN | (9) 654 | (9) Cellular Telephone Microphone Low Reference | (9) I | (9) — |
| 10 - 12 | — | — | — | Not Occupied | — | — |

## K73 Telematic Control Module X3 (- UKL)



6186811

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13563022
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( BU)

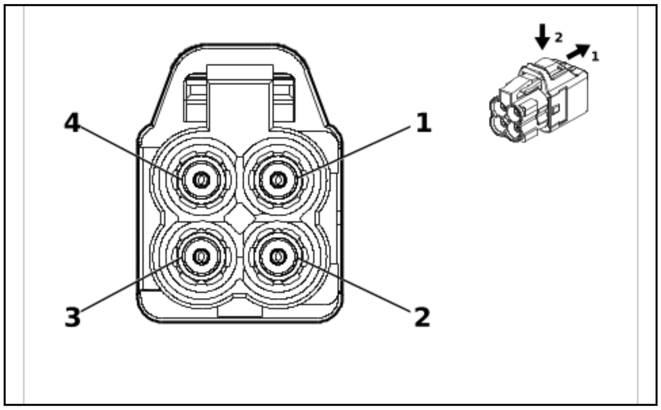
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### K73 Telematic Control Module X3 (- UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (GPS/Cell) Coaxial Antenna Cell/GPS combined Signal | I | — |

## K73 Telematic Control Module X3 (UKL)



6759178

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13563024
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( GN)

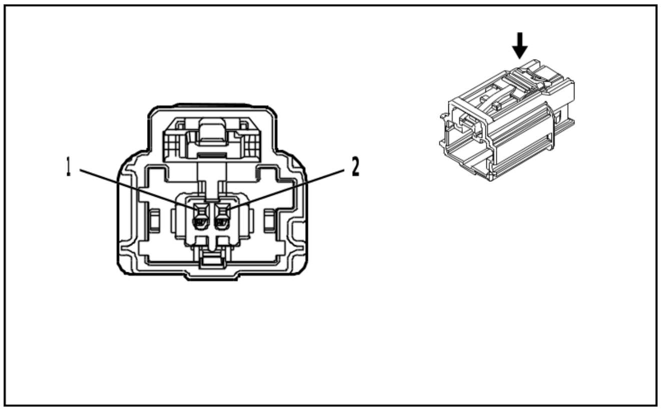
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K73 Telematic Control Module X3 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (1) 1 | (1) 0.5 | (1) Coax Cable | (1) 10314 | (1) Global Navigation Satellite System Antenna Coaxial Signal | (1) I | (1) — |
| (3) 3 | (3) 0.5 | (3) Coax Cable | (3) 10292 | (3) Cell Phone Antenna 2 Coaxial Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) Coax Cable | (4) 6449 | (4) Coaxial Antenna Cell Phone Signal | (4) I | (4) — |

### K73 Telematic Control Module X7



4942391

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 13532867
- Service Connector: 13532867
- Description: 2-Way F 0.5 CTS, AMEC High Speed Data Series( BK)

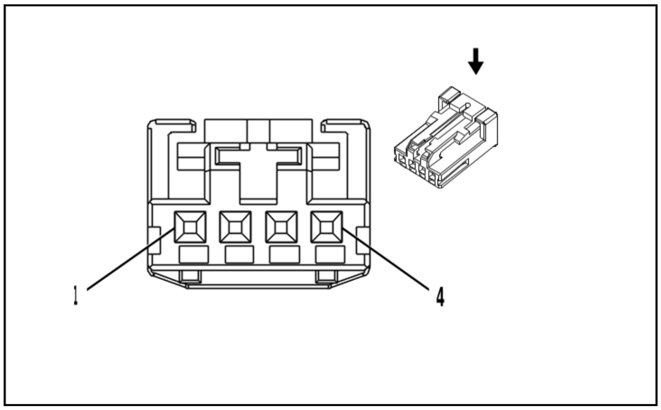
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | J-35616-64B (L-BU) | J-38125-215A |

## K73 Telematic Control Module X7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.13 | (1) WH | (1) 7211 | (1) Ethernet Bus 4 [+] | (1) I | (1) — |
| (2) 2 | (2) 0.13 | (2) GN | (2) 7210 | (2) Ethernet Bus 4 [-] | (2) I | (2) — |

### K77 Remote Function Actuator Module



2717162

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

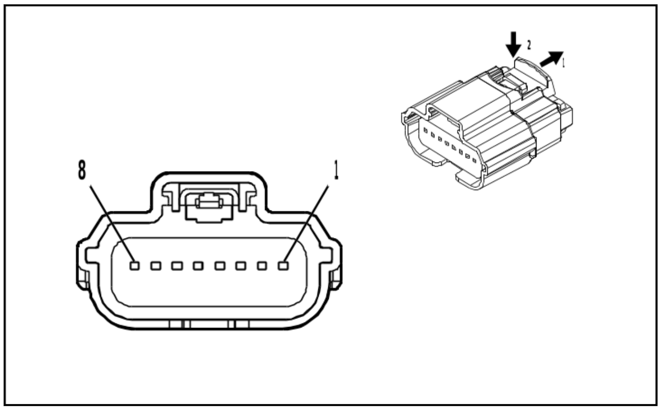
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K77 Remote Function Actuator Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / VT | (1) 2640 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / YE | (2) 2862 | (2) Body Control Module LIN Bus 16 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 1351 | (4) Signal Ground | (4) I | (4) — |

## K85P Restraints Occupant Classification System Module - Passenger



4708234

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 31404-9110
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 64 Series, Sealed( BK)

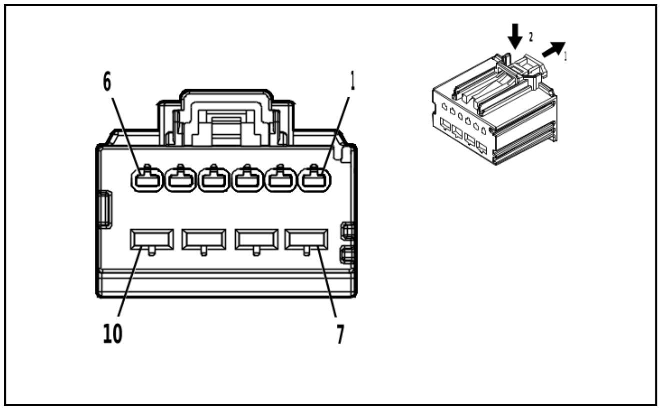
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### K85P Restraints Occupant Classification System Module - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 4440 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 4987 | (2) AUTOSAR CAN Bus [+] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 4987 | (3) AUTOSAR CAN Bus [+] 1 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4986 | (4) AUTOSAR CAN Bus [-] 1 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4986 | (5) AUTOSAR CAN Bus [-] 1 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BK / WH | (6) 1351 | (6) Signal Ground | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) OG / BN | (7) 3947 | (7) Passenger Automatic Locking Retractor Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GY / OG | (8) 3946 | (8) Passenger Automatic Locking Retractor Switch Low Reference | (8) I | (8) — |

## K99 Steering Column Control Module X1 (N38)



5035058

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 31372-1600
- Service Connector: 13525907
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

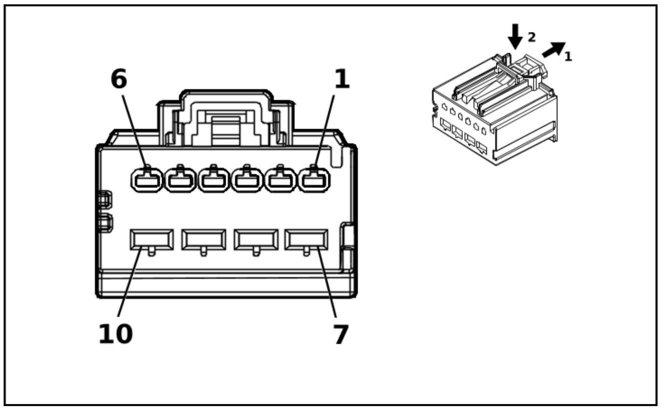
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300432 | J-35616-2A (GY) | J-38125-557 |
| II | 85544080 | J-35616-4A (PU) | J-38125-11A |

## K99 Steering Column Control Module X1 (N38)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT / BK | (1) 2020 | (1) Steering Column Tilt and Telescope Switch Feedback Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 7530 | (2) Driver Seat Adjuster Memory Module LIN Bus 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BN | (3) 2095 | (3) Steering Column Tilt and Telescope Switch Rearward Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / GY | (4) 2096 | (4) Steering Column Tilt and Telescope Switch Up Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE / BN | (5) 2097 | (5) Steering Column Tilt and Telescope Switch Down Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / YE | (6) 2094 | (6) Steering Column Tilt and Telescope Switch Forward Signal | (6) I | (6) — |
| (7) 7 | (7) 1 | (7) RD / VT | (7) 4640 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 1 | (8) BK | (8) 1850 | (8) Ground | (8) II | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |

### K99 Steering Column Control Module X2



5190551

**Connector Part Information**

- Harness Type: Steering Column Tilt and Telescope Wheel Actuator Motor Harness
- OEM Connector: 31372-1700
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( GY)

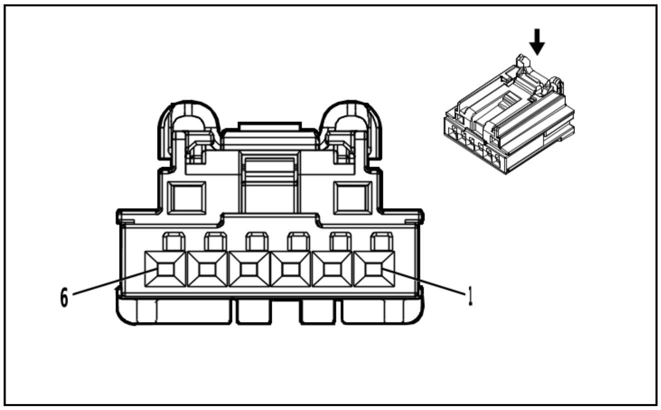
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K99 Steering Column Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT / GY | (1) 2153 | (1) Steering Column Telescope Motor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BK | (2) 2152 | (2) Steering Column Telescope Motor Low Reference | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) YE | (3) 2154 | (3) Steering Column Tilt Motor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / BK | (4) 2157 | (4) Steering Column Tilt Motor Low Reference | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 1 | (7) BU / BK | (7) 2098 | (7) Steering Column Telescope Motor Forward Control | (7) I | (7) — |
| (8) 8 | (8) 1 | (8) YE / BN | (8) 2110 | (8) Steering Column Telescope Motor Rearward Control | (8) I | (8) — |
| (9) 9 | (9) 1 | (9) BN / GY | (9) 2112 | (9) Steering Column Tilt Motor Down Control | (9) I | (9) — |
| (10) 10 | (10) 1 | (10) GY / VT | (10) 2111 | (10) Steering Column Tilt Motor Up Control | (10) I | (10) — |

### K104DP Front Seat Bladder Control Module - Driver Primary (AVK)



5020940

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

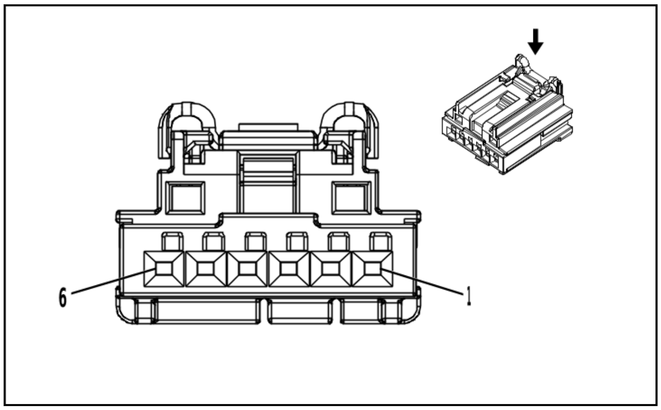
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K104DP Front Seat Bladder Control Module - Driver Primary (AVK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 3758 | (2) Driver Seat Adjuster Memory Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) WH / BU | (3) 4891 | (3) Driver Seat Lumbar/Bolster Pump Control | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BK | (4) 1150 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BN / BK | (5) 2305 | (5) Driver Seat Bolster Pump Low Reference | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### K104P Front Seat Bladder Control Module - Passenger (AVU - AKE)



3960313

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

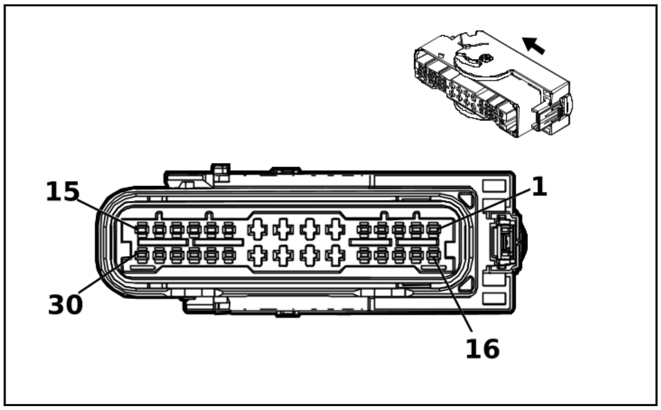
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K104P Front Seat Bladder Control Module - Passenger (AVU - AKE)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / BU | (1) 3940 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) GY / WH | (3) 4890 | (3) Passenger Seat Lumbar/Bolster Pump Control | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BK | (4) 1250 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / BU | (5) 2194 | (5) Passenger Seat Position Switch Low Reference | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / GN | (6) 1068 | (6) Passenger Seat Lumbar Support Switch Analog Signal | (6) I | (6) — |

### K111 Fuel Pump Power Control Module



3240109

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 5-2109446-7
- Service Connector: 86545828
- Description: 30-Way F 1.5, 2.8 MCP Series, Sealed( BK)

## Terminal Part Information

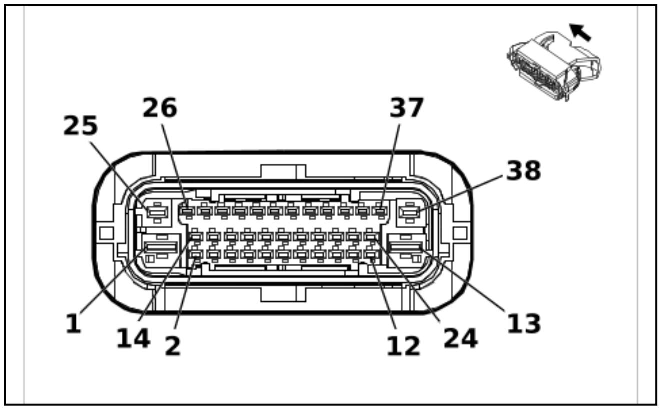
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19329958 | J-35616-2A (GY) | J-38125-217 |
| II | 19371214 | J-35616-35 (VT) | J-38125-556 |

## K111 Fuel Pump Power Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) BU / YE | (2) 6861 | (2) Water In Fuel Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 6863 | (3) Water In Fuel Sensor Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / GY | (4) 7072 | (4) Fuel Temperature Sensor 1 Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) RD / VT | (7) 1940 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) GY | (8) 120 | (8) Fuel Pump Control | (8) II | (8) — |
| (9) 9 | (9) 2.5 | (9) YE / GY | (9) 4137 | (9) Fuel Pump Supply Voltage Phase 2 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) YE / RD | (10) 2709 | (10) Fuel Tank Pressure Sensor 5V Reference | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BU | (11) 890 | (11) Fuel Tank Pressure Sensor Signal | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BN / RD | (12) 7445 | (12) Fuel Line Pressure Sensor 5V Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BU / GN | (13) 1936 | (13) Primary Fuel Level Sensor Signal | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |
| (15) 15 | (15) 0.5 | (15) BU / GY | (15) 4054 | (15) Private Serial Data Powertrain CAN Bus [-] Serial Data | (15) I | (15) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.5<br>(16) 0.75 | (16) VT / GN<br>(16) VT / GN | (16) 4320<br>(16) 4320 | (16) Powertrain Sensor Bus Enable<br>(16) Powertrain Sensor Bus Enable | (16) I<br>(16) I | (16) L84/ L87<br>(16) LZ0 |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) GN / GY | (18) 465 | (18) Fuel Pump Primary Relay Control | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BN / WH | (19) 7073 | (19) Fuel Temperature Sensor 1 Low Reference | (19) I | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.5 | (21) WH | (21) 1310 | (21) EVAP Vent Solenoid Valve Control | (21) II | (21) — |
| (22) 22 | (22) 2.5 | (22) BK | (22) 1950 | (22) Ground | (22) II | (22) — |
| (23) 23 | (23) 0.5 | (23) BK | (23) 7444 | (23) Fuel Pump Assembly Shield Ground | (23) II | (23) — |
| (24) 24 | (24) 2.5 | (24) WH / BN | (24) 4138 | (24) Fuel Pump Supply Voltage Phase 3 | (24) II | (24) — |
| (25) 25 | (25) 0.5 | (25) BK / BN | (25) 6284 | (25) Fuel Tank Pressure Sensor Low Reference | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) BU / WH | (26) 7446 | (26) Fuel Pressure Sensor Signal | (26) I | (26) — |
| (27) 27 | (27) 0.5 | (27) BK / YE | (27) 7447 | (27) Fuel Pressure Sensor Low Reference | (27) I | (27) — |
| (28) 28 | (28) 0.5 | (28) BK / GN | (28) 6281 | (28) Fuel Level Sensor Low Reference | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) WH | (30) 4055 | (30) Private Serial Data Powertrain CAN Bus [+] Serial Data | (30) I | (30) — |

### K115 Reductant Control Module



3240111

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 35202510
- Service Connector: Service by Harness - See Part Catalog
- Description: 38-Way F 1.5 CTS, 2.8 MCP, 4.8 MCP Series, Sealed( BK with BK Inner Connector)

## Terminal Part Information

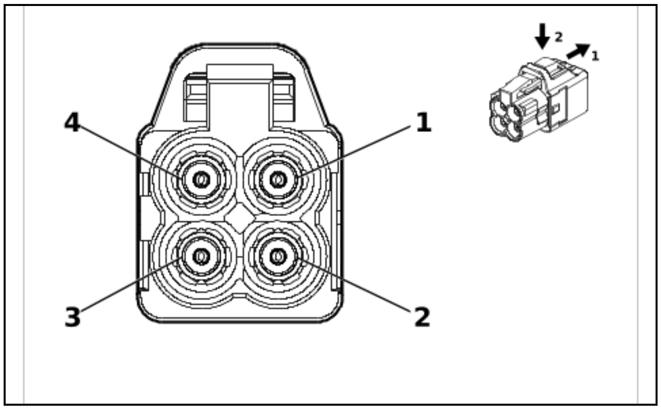
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |

## K115 Reductant Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) BK | (1) 3440 | (1) Battery Positive Voltage | (1) III | (1) — |
| (2) 2 | (2) 1 | (2) BN | (2) 3676 | (2) Diesel Exhaust Fluid Heating Tank 2 Heater Control | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 1 | (4) YE | (4) 3677 | (4) Diesel Exhaust Fluid Reservoir Heater Control | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 3244 | (6) Diesel Exhaust Fluid Tank Temperature Sensor Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 7290 | (7) Diesel Exhaust Fluid Sensor Voltage Reference 1 | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BN | (8) 7284 | (8) Diesel Exhaust Fluid Liquid Quality Temperature Signal | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) BK | (9) 8434 | (9) Diesel Exhaust Fluid Sensor Low Reference | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 1 | (11) YE | (11) 3876 | (11) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 3 | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 3 | (13) WH | (13) 1650 | (13) Ground | (13) III | (13) — |
| (14) 14 | (14) 1 | (14) BN | (14) 2936 | (14) Diesel Exhaust Fluid Heating Tank 2 Heater Control Low | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 1 | (16) BU | (16) 4318 | (16) Diesel Exhaust Fluid Tank Heater Low Control | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.5 | (18) BN | (18) 3245 | (18) Diesel Exhaust Fluid Tank Temperature Sensor Low Reference | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) BN | (19) 3106 | (19) Diesel Exhaust Fluid Pressure Sensor 5 Volt Reference | (19) I | (19) — |
| (20) 20 | (20) 0.5 | (20) BU | (20) 3108 | (20) Diesel Exhaust Fluid Pressure Sensor Signal | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) BU | (21) 3107 | (21) Diesel Exhaust Fluid Pressure Sensor Low Reference | (21) I | (21) — |
| 22 - 23 | — | — | — | Not Occupied | — | — |
| (24) 24 | (24) 1 | (24) BN | (24) 3875 | (24) Diesel Exhaust Fluid Smart Pump Supply Voltage Phase 2 | (24) I | (24) — |
| 25 | — | — | — | Not Occupied | — | — |
| (26) 26 | (26) 1 | (26) WH | (26) 3199 | (26) Diesel Exhaust Fluid Pressure Line Heater Control | (26) I | (26) — |
| 27 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (28) 28 | (28) 1 | (28) BN | (28) 4319 | (28) Diesel Exhaust Fluid Line Heater Low Control | (28) I | (28) — |
| 29 | — | — | — | Not Occupied | — | — |
| (30) 30 | (30) 0.5 | (30) BN | (30) 2139 | (30) Run/Crank Ignition 1 Voltage | (30) I | (30) — |
| (31) 31 | (31) 0.5 | (31) BU | (31) 4987 | (31) AUTOSAR CAN Bus [+] 1 Serial Data | (31) I | (31) — |
| (32) 32 | (32) 0.5 | (32) BU | (32) 4987 | (32) AUTOSAR CAN Bus [+] 1 Serial Data | (32) I | (32) — |
| (33) 33 | (33) 0.5 | (33) BN | (33) 4986 | (33) AUTOSAR CAN Bus [-] 1 Serial Data | (33) I | (33) — |
| (34) 34 | (34) 0.5 | (34) BN | (34) 4986 | (34) AUTOSAR CAN Bus [-] 1 Serial Data | (34) I | (34) — |
| 35 | — | — | — | Not Occupied | — | — |
| (36) 36 | (36) 1 | (36) BU | (36) 2937 | (36) Diesel Exhaust Fluid Pump Motor Stator Low Reference | (36) I | (36) — |
| (37) 37 | (37) 1 | (37) WH | (37) 3103 | (37) Diesel Exhaust Fluid Smart Pump Control | (37) I | (37) — |
| (38) 38 | (38) 2 | (38) RD | (38) 2040 | (38) Battery Positive Voltage | (38) II | (38) — |

### K124 Image Processing Module X1 (UK0 / UKL)



5835118

**Connector Part Information**
- Harness Type: Body Wiring Harness COAX
- OEM Connector: AMZW25-001-A
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( BK)

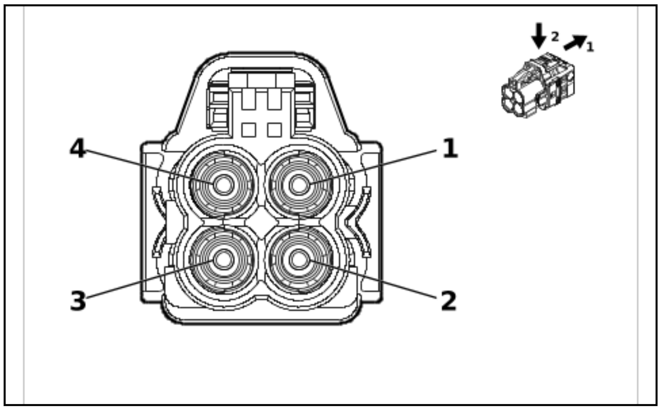
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K124 Image Processing Module X1 (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.4 | (4) Coax Cable | (4) 4723 | (4) Video Processing Module LVDS (Low Voltage Differential Signaling) Coaxial Signal | (4) I | (4) — |

## K124 Image Processing Module X2 (UK0 / UKL)



6904492

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: AMZW25-001-D
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( VT)

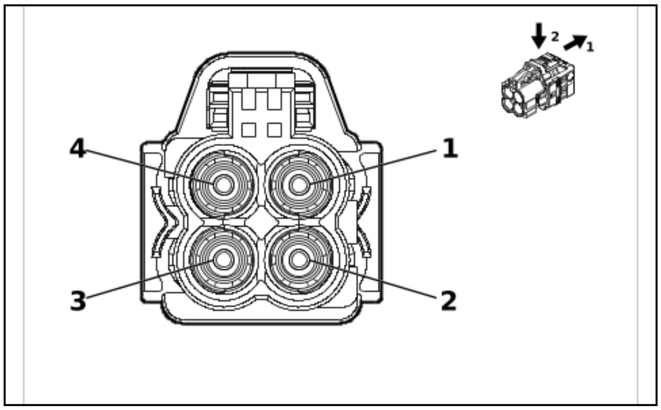
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K124 Image Processing Module X2 (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0 | (1) Coax Cable | (1) 4722 | (1) Frontview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) I | (1) — |
| (2) 2 | (2) 0 | (2) Coax Cable | (2) 4725 | (2) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) I | (2) — |
| (3) 3 | (3) 0 | (3) Coax Cable | (3) 4724 | (3) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (3) I | (3) — |
| (4) 4 | (4) 0 | (4) Coax Cable | (4) 4721 | (4) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (4) I | (4) — |

### K124 Image Processing Module X3 (UK0 / UKL)



5903560

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13563021
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( WH)

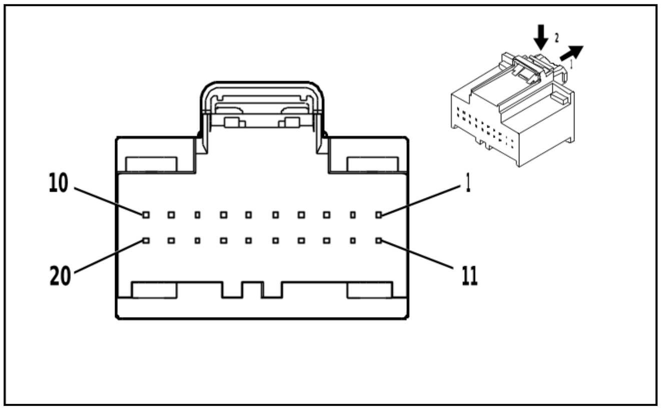
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K124 Image Processing Module X3 (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.4 | (3) Coax Cable | (3) 4726 | (3) Driver Monitoring System Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (3) I | (3) — |

### K124 Image Processing Module X6 (UK0 / UKL)



5109511

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 31410-0208
- Service Connector: 13525993
- Description: 20-Way F 0.64 Series( GN)

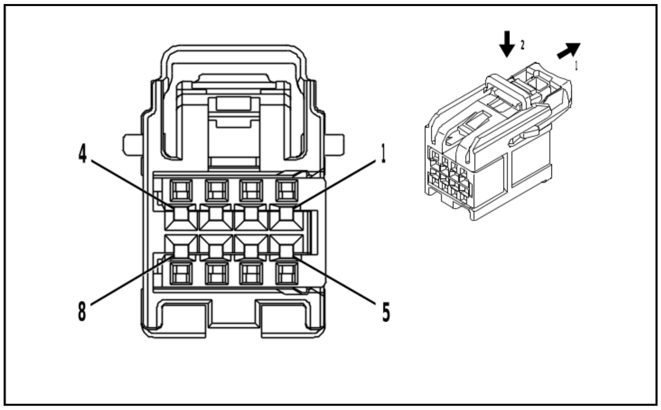
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13584547 | J-35616-64B (L-BU) | J-38125-215A |
| II | Service by Cable | J-35616-64B (L-BU) | J-38125-215A |

## K124 Image Processing Module X6 (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH | (1) 4978 | (1) AUTOSAR CAN Bus [-] 2 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4978 | (2) AUTOSAR CAN Bus [-] 2 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / YE | (4) 4979 | (4) AUTOSAR CAN Bus [+] 2 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4978 | (5) AUTOSAR CAN Bus [-] 2 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / YE | (6) 4979 | (6) AUTOSAR CAN Bus [+] 2 Serial Data | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) BN / WH | (9) 7209 | (9) Ethernet Bus 3 [+] | (9) II | (9) — |
| (10) 10 | (10) 0.35 | (10) BN | (10) 7208 | (10) Ethernet Bus 3 [-] | (10) II | (10) — |
| (11) 11 | (11) 0.35 | (11) WH | (11) 8976 | (11) Private Serial Data Active Safety CAN Bus [-] Serial Data | (11) II | (11) — |
| (12) 12 | (12) 0.35 | (12) BU | (12) 8977 | (12) Private Serial Data Active Safety CAN Bus [+] Serial Data | (12) II | (12) — |
| (13) 13 | (13) 0.5 | (13) WH / GY | (13) 4104 | (13) AUTOSAR CAN Bus [-] 8 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BU / GY | (14) 4105 | (14) AUTOSAR CAN Bus [+] 8 Serial Data | (14) I | (14) — |
| 15 - 20 | — | — | — | Not Occupied | — | — |

### K124 Image Processing Module X7 (UK0 / UKL)



4232228

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

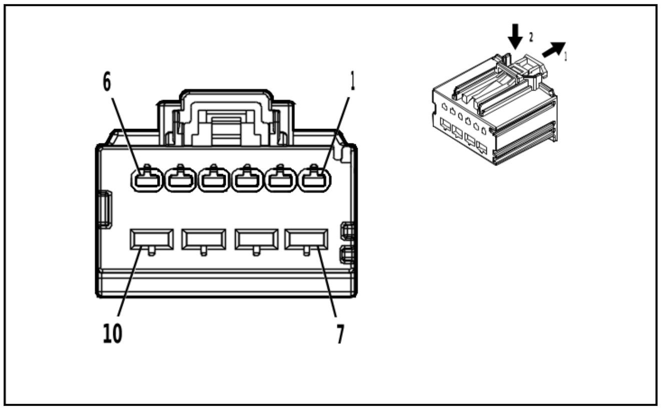
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K124 Image Processing Module X7 (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4976 | (2) AUTOSAR CAN Bus [-] 3 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / BK | (3) 4977 | (3) AUTOSAR CAN Bus [+] 3 Serial Data | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) VT / GY | (5) 8978 | (5) Inertial Sensor Supply Voltage | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) GN / GY | (6) 11023 | (6) Image Processing Module LIN Bus 1 | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 4976 | (7) AUTOSAR CAN Bus [-] 3 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / BK | (8) 4977 | (8) AUTOSAR CAN Bus [+] 3 Serial Data | (8) I | (8) — |

### K124 Image Processing Module X8 (UK0 / UKL)



5035058

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 31372-1600
- Service Connector: 13525907
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

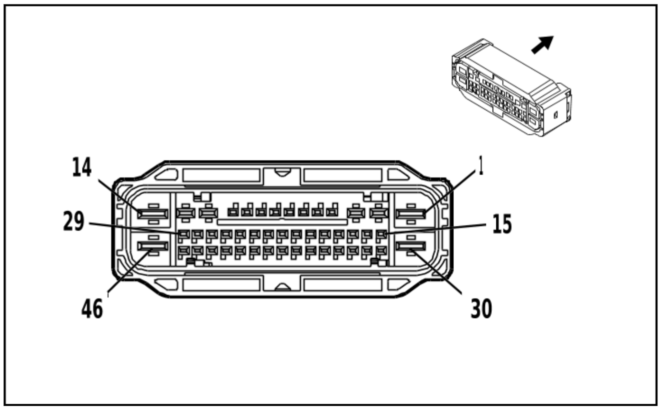
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300432 | J-35616-2A (GY) | J-38125-557 |
| II | 85544080 | J-35616-4A (PU) | J-38125-11A |

## K124 Image Processing Module X8 (UK0 / UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BN | (1) 7744 | (1) Driver Illumination Lamp Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / VT | (2) 2246 | (2) Driver Illumination Lamp 1 Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) YE / BU | (3) 2245 | (3) Driver Illumination Lamp 2 Control | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 1 | (7) RD / BN | (7) 13240 | (7) Battery Positive Voltage | (7) II | (7) — |
| (8) 8 | (8) 1 | (8) BK | (8) 1450 | (8) Ground | (8) II | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |

### K160 Brake System Control Module



4162046

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13557960
- Service Connector: 85090369
- Description: 46-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575368 | J-35616-35 (VT) | J-38125-556 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 84634921 | J-35616-42 (RD) | J-38125-212 |

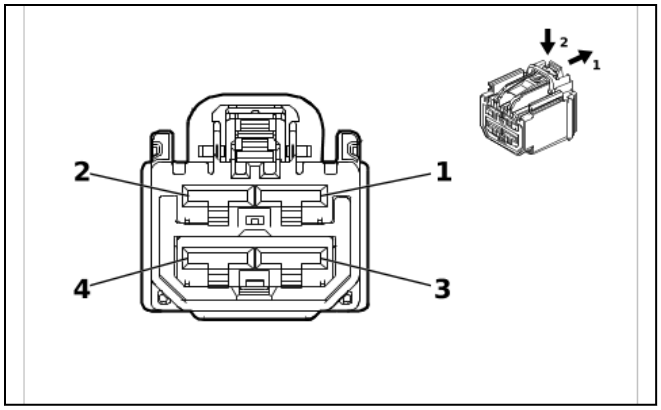
## K160 Brake System Control Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 6 | (1) BK | (1) 150 | (1) Ground | (1) III | (1) — |
| (2) 2 | (2) 2.5 | (2) WH | (2) 2001 | (2) Left Park Brake Motor Apply Control | (2) I | (2) — |
| (3) 3 | (3) 2.5 | (3) GY / BK | (3) 4369 | (3) Left Park Brake Motor Low Reference | (3) I | (3) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.5 | (4) GY / WH | (4) 7064 | (4) Left Front Wheel Speed Sensor Control | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) GY | (5) 830 | (5) Left Front Wheel Speed Sensor Signal | (5) II | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.5 | (9) VT / WH | (9) 639 | (9) Run/Crank Ignition 1 Voltage | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) GY / BN | (10) 7065 | (10) Right Front Wheel Speed Sensor Control | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) YE | (11) 872 | (11) Right Front Wheel Speed Sensor Signal | (11) II | (11) — |
| (12) 12 | (12) 2.5 | (12) GN / VT | (12) 1988 | (12) Right Park Brake Motor Apply Control | (12) I | (12) — |
| (13) 13 | (13) 2.5 | (13) GY | (13) 4368 | (13) Right Park Brake Motor Low Reference | (13) I | (13) — |
| (14) 14 | (14) 6 | (14) RD / YE | (14) 442 | (14) Battery Positive Voltage | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) GY / BK | (15) 7127 | (15) Left Rear Wheel Speed Sensor Control | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) BU | (16) 884 | (16) Left Rear Wheel Speed Sensor Signal | (16) II | (16) — |
| (17) 17 | (17) 0.35 | (17) BU / YE | (17) 4979 | (17) AUTOSAR CAN Bus [+] 2 Serial Data | (17) II | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / YE | (18) 4979 | (18) AUTOSAR CAN Bus [+] 2 Serial Data | (18) II | (18) — |
| (19) 19 | (19) 0.5 | (19) GN / GY | (19) 817 | (19) Vehicle Speed Signal | (19) II | (19) — |
| 20 - 22 | — | — | — | Not Occupied | — | — |
| (23) 23 | (23) 0.5 | (23) GN / YE | (23) 2731 | (23) Brake System Control Module LIN Bus 1 | (23) II | (23) — |
| 24 | — | — | — | Not Occupied | — | — |
| (25) 25 | (25) 0.5 | (25) WH | (25) 4976 | (25) AUTOSAR CAN Bus [-] 3 Serial Data | (25) II | (25) — |
| (26) 26 | (26) 0.5 | (26) WH | (26) 4976 | (26) AUTOSAR CAN Bus [-] 3 Serial Data | (26) II | (26) — |
| 27 | — | — | — | Not Occupied | — | — |
| (28) 28 | (28) 0.5 | (28) GY / YE | (28) 7128 | (28) Right Rear Wheel Speed Sensor Control | (28) II | (28) — |
| (29) 29 | (29) 0.5 | (29) VT | (29) 882 | (29) Right Rear Wheel Speed Sensor Signal | (29) II | (29) — |
| (30) 30 | (30) 6 | (30) BK | (30) 150 | (30) Ground | (30) III | (30) — |
| 31 - 32 | — | — | — | Not Occupied | — | — |
| (33) 33 | (33) 0.35 | (33) WH | (33) 4978 | (33) AUTOSAR CAN Bus [-] 2 Serial Data | (33) II | (33) — |
| (34) 34 | (34) 0.35 | (34) WH | (34) 4978 | (34) AUTOSAR CAN Bus [-] 2 Serial Data | (34) II | (34) — |
| (35) 35 | (35) 0.75 | (35) GN / BU | (35) 2733 | (35) Brake System Control Module LIN Bus 2 | (35) II | (35) — |
| (36) 36 | (36) 0.75 | (36) WH / BK | (36) 2223 | (36) Trailer Brake Apply Signal | (36) II | (36) — |
| (37) 37 | (37) 0.75 | (37) YE / BK | (37) 2224 | (37) Trailer Brake Enable Signal | (37) II | (37) — |
| (38) 38 | (38) 0.5 | (38) GN / GY | (38) 333 | (38) Brake Fluid Level Signal | (38) II | (38) — |
| (39) 39 | (39) 0.75 | (39) BN / BU | (39) 1602 | (39) Front Brake Pad Wear Sensor Signal | (39) II | (39) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 40 | — | — | — | Not Occupied | — | — |
| (41) 41 | (41) 0.5 | (41) BU / BK | (41) 4977 | (41) AUTOSAR CAN Bus [+] 3 Serial Data | (41) II | (41) — |
| (42) 42 | (42) 0.5 | (42) BU / BK | (42) 4977 | (42) AUTOSAR CAN Bus [+] 3 Serial Data | (42) II | (42) — |
| 43 | — | — | — | Not Occupied | — | — |
| (44) 44 | (44) 0.75 | (44) GN / YE | (44) 1616 | (44) Rear Brake Pad Wear Sensor Signal | (44) II | (44) — |
| 45 | — | — | — | Not Occupied | — | — |
| (46) 46 | (46) 6 | (46) RD / WH | (46) 1642 | (46) Battery Positive Voltage | (46) III | (46) — |

### K164 Differential Control Module X1 (G96)



5492913

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7459-40
- Service Connector: 84766433
- Description: 4-Way F 6.3 YESC Series( GY)

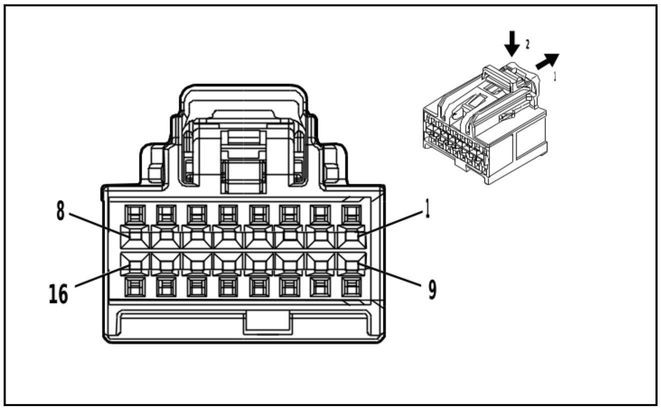
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |

## K164 Differential Control Module X1 (G96)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) GY / BN | (1) 7968 | (1) Axle Differential Lock Control High | (1) I | (1) — |
| (2) 2 | (2) 3 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 3 | (3) RD / GY | (3) 5540 | (3) Battery Positive Voltage | (3) I | (3) — |
| (4) 4 | (4) 4 | (4) YE / WH | (4) 7969 | (4) Axle Differential Lock Control Low | (4) I | (4) — |

### K164 Differential Control Module X2 (G96)



4873243

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35016343
- Service Connector: 13519738
- Description: 16-Way F 0.64 OCS Series( BK)

## Terminal Part Information

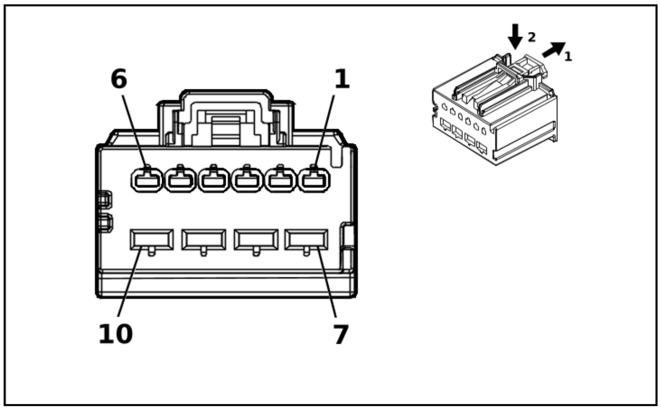
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84619127 | J-35616-64B (L-BU) | J-38125-215A |

## K164 Differential Control Module X2 (G96)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH | (1) 4978 | (1) AUTOSAR CAN Bus [-] 2 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 4978 | (2) AUTOSAR CAN Bus [-] 2 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH | (3) 4978 | (3) AUTOSAR CAN Bus [-] 2 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / WH | (4) 7978 | (4) Axle Differential Lock Motor Temperature Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GY | (5) 7976 | (5) Axle Differential Lock Motor Position Sensor Signal 2 | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / BN | (6) 7975 | (6) Axle Differential Lock Motor Position Sensor Signal 1 | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) VT / BK | (7) 7972 | (7) Axle Differential Lock Motor Brake Control Low | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BARE | (8) 7970 | (8) Axle Differential Lock Control Shield | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / YE | (9) 4979 | (9) AUTOSAR CAN Bus [+] 2 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / YE | (10) 4979 | (10) AUTOSAR CAN Bus [+] 2 Serial Data | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) BU / YE | (11) 4979 | (11) AUTOSAR CAN Bus [+] 2 Serial Data | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BK / YE | (12) 7977 | (12) Axle Differential Lock Motor Temperature Sensor Low Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BK / VT | (13) 7974 | (13) Axle Differential Lock Motor Position Sensor Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.75 | (14) WH / RD | (14) 7973 | (14) Axle Differential Lock Motor Position Sensor High Reference | (14) I | (14) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.75 | (16) WH | (16) 7971 | (16) Axle Differential Lock Motor Brake Control High | (16) I | (16) — |

### K169 Folding 3rd Row Seat Module X1



5190551

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 31372-1700
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( GY)

## Terminal Part Information

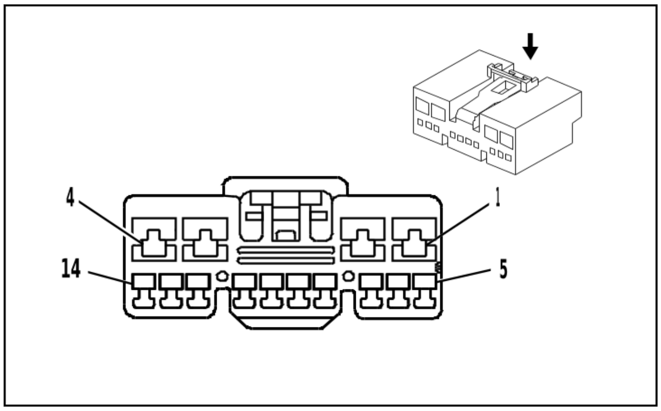
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## K169 Folding 3rd Row Seat Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / BN | (1) 8921 | (1) Right 3rd Row Folding Seat Back Unlatch Motor Control High | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / VT | (2) 8920 | (2) Right 3rd Row Folding Seat Back Unlatch Motor Control Low | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BN | (3) 4214 | (3) 3rd Row Left Seat Recline Position Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BK / BU | (4) 5474 | (4) 3rd Row Seat Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / VT | (5) 4213 | (5) 3rd Row Right Seat Recline Position Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / BU | (6) 2856 | (6) Body Control Module LIN Bus 10 | (6) I | (6) — |
| (7) 7 | (7) 1.5 | (7) BU | (7) 4217 | (7) 3rd Row Right Seat Recline Motor Forward Control | (7) II | (7) — |
| (8) 8 | (8) 1.5 | (8) GY / OG | (8) 4218 | (8) 3rd Row Right Seat Recline Rearward Control | (8) II | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 2.5 | (10) BK | (10) 1450 | (10) Ground | (10) II | (10) — |

### K169 Folding 3rd Row Seat Module X2



1469285

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 7283-8397-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 0.64, 2.8 YESC Series( L-GY)

## Terminal Part Information

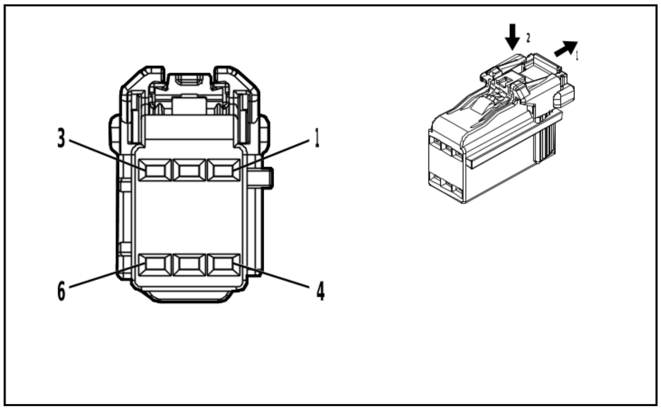
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## K169 Folding 3rd Row Seat Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / GY | (1) 7840 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) VT / BK | (3) 4221 | (3) 3rd Row Left Seat Recline Motor Forward Control | (3) I | (3) — |
| (4) 4 | (4) 1.5 | (4) BN | (4) 4222 | (4) 3rd Row Left Seat Recline Motor Rearward Control | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) YE / BU | (6) 2698 | (6) Left 3rd Row Seat Recline Switch Signal | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) GN / GY | (7) 2699 | (7) Right 3rd Row Seat Recline Switch Signal | (7) II | (7) — |
| 8 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.75 | (11) GY / WH | (11) 8922 | (11) Left 3rd Row Folding Seat Back Unlatch Motor Control Low | (11) II | (11) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (12) 12 | (12) 0.75 | (12) YE / BK | (12) 8923 | (12) Left 3rd Row Folding Seat Back Unlatch Motor Control High | (12) II | (12) — |
| 13 - 14 | — | — | — | Not Occupied | — | — |

### K175 Front Floor Console Compartment Cooler (DCK)



4862126

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8996
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 1.2 Series( BK)

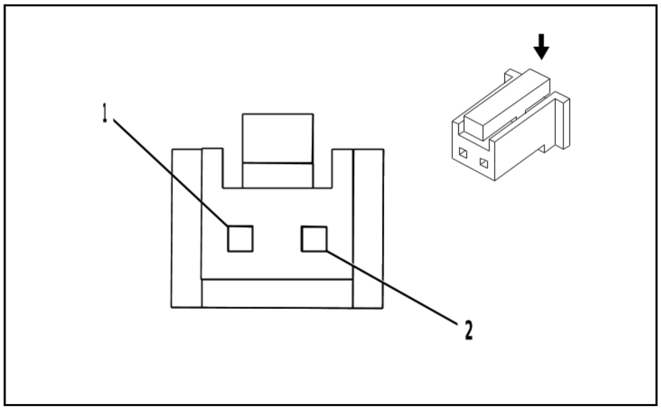
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## K175 Front Floor Console Compartment Cooler (DCK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / VT | (1) 8640 | (1) Battery Positive Voltage | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1250 | (2) Ground | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / VT | (3) 2857 | (3) Body Control Module LIN Bus 11 | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / WH | (4) 7846 | (4) Refrigerator On Indicator Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / GN | (5) 7845 | (5) Refrigerator Freeze Indicator Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / BK | (6) 7844 | (6) Refrigerator Enable Signal | (6) I | (6) — |

### K180S Driver Monitoring System Module - Steering Wheel X1 (UKL)



3623867

**Connector Part Information**
- Harness Type: Steering Wheel Assembly
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F ( WH)

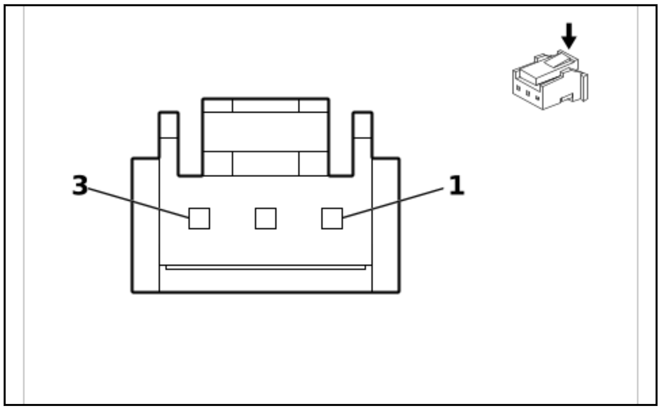
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X1 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) — | (1) Touch Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) WH | (2) — | (2) Touch Sensor Low Reference | (2) I | (2) — |

### K180S Driver Monitoring System Module - Steering Wheel X2 (UKL)



5867324

**Connector Part Information**
- Harness Type: Steering Wheel Assembly
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F ( WH)

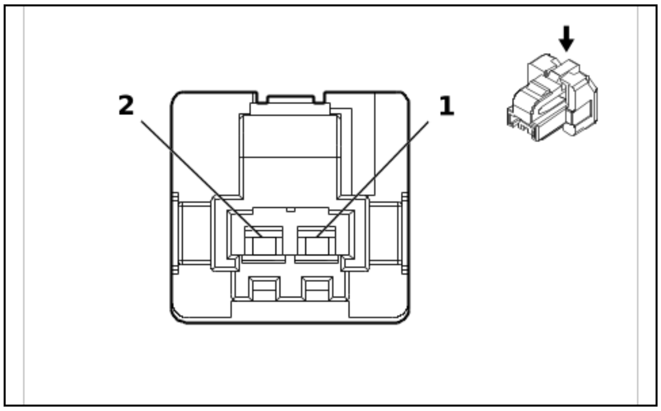
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X2 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) — | (2) BK | (2) — | (2) Touch Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) — | (3) WH | (3) — | (3) Touch Sensor Low Reference | (3) I | (3) — |

### K180S Driver Monitoring System Module - Steering Wheel X3 (UKL)



6280465

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 502380-0200
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F Click-Mate Series( NA)

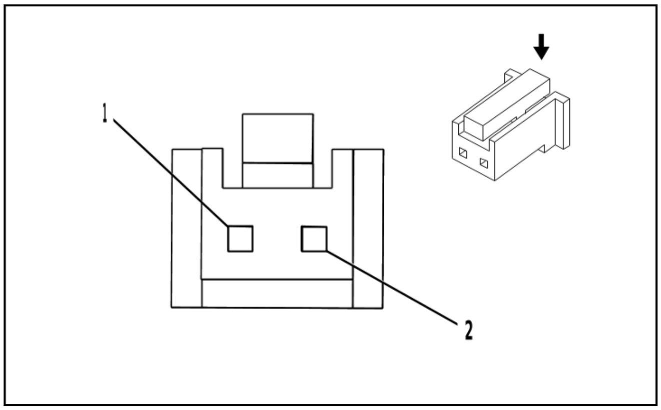
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X3 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.13 | (1) YE / GY | (1) 5883 | (1) Steering Wheel Heating Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.13 | (2) BN / WH | (2) 5884 | (2) Steering Wheel Heating Switch LED Control | (2) I | (2) — |

### K180S Driver Monitoring System Module - Steering Wheel X4 (UKL)



3623867

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

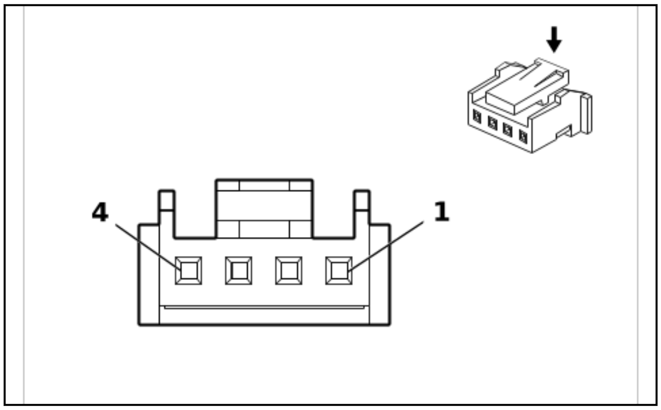
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X4 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) VT / BU | (1) 5886 | (1) Steering Wheel Heating Temperature Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) — | (2) YE / RD | (2) 5885 | (2) Steering Wheel Heating Voltage Reference | (2) I | (2) — |

### K180S Driver Monitoring System Module - Steering Wheel X5 (UKL)



6276016

**Connector Part Information**
- Harness Type: Steering Wheel LED Display
- OEM Connector: PAP-04V-S
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 050 Series( NA)

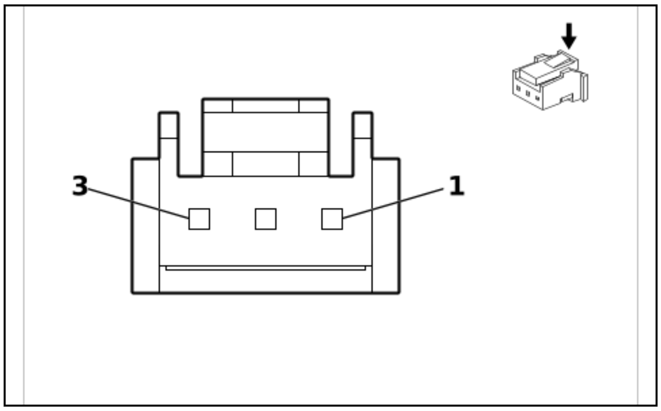
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X5 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BN / VT | (1) 7745 | (1) Steering Wheel Lightbar Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU / GN | (2) 7748 | (2) Steering Wheel Lightbar Blue Control | (2) I | (2) — |
| (3) 3 | (3) — | (3) VT / YE | (3) 7747 | (3) Steering Wheel Lightbar Green Control | (3) I | (3) — |
| (4) 4 | (4) — | (4) GY / BU | (4) 7746 | (4) Steering Wheel Lightbar Red Control | (4) I | (4) — |

### K180S Driver Monitoring System Module - Steering Wheel X6 (UKL)



5867324

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: PAP-03V-S
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 050 Series( WH)

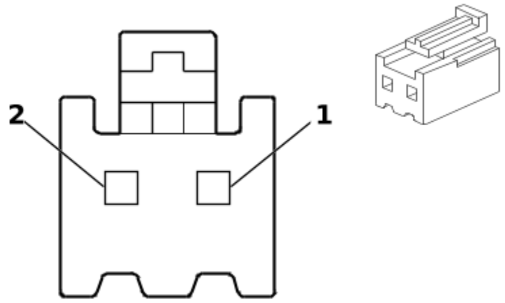
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X6 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BK | (2) 11023 | (2) Image Processing Module LIN Bus 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / WH | (3) 6051 | (3) Steering Wheel Ground | (3) I | (3) — |

### K180S Driver Monitoring System Module - Steering Wheel X7 (UKL)



2212059

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: VHR-2N-R
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F VH Series( RD)

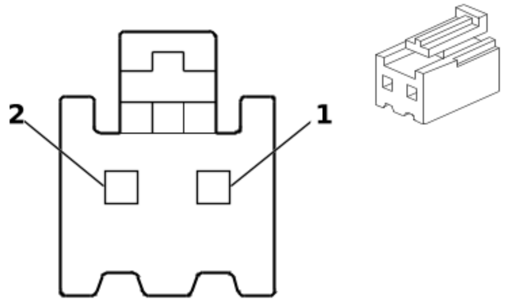
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-18 (BK) | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X7 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BU | (1) 10040 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 6050 | (2) Steering Wheel Ground | (2) I | (2) — |

### K180S Driver Monitoring System Module - Steering Wheel X8 (UKL)



2212059

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

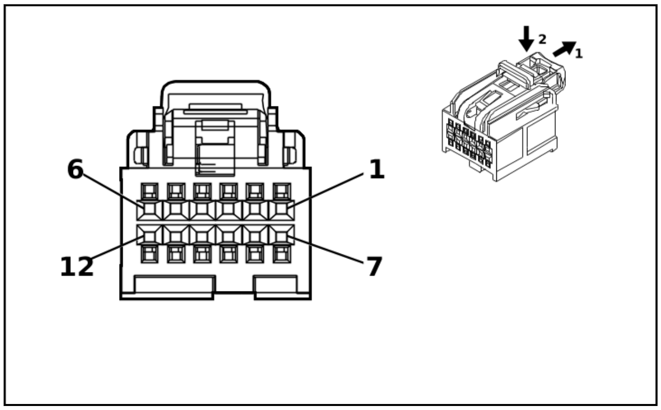
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K180S Driver Monitoring System Module - Steering Wheel X8 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) GY / YE | (1) 5887 | (1) Steering Wheel Heating Low Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) WH / YE | (2) 5888 | (2) Steering Wheel Heating High Control | (2) I | (2) — |

### K182 Parking Assist Control Module X1



4975223

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35016616
- Service Connector: 13519750
- Description: 12-Way F 0.64 OCS Series( BK)

## Terminal Part Information

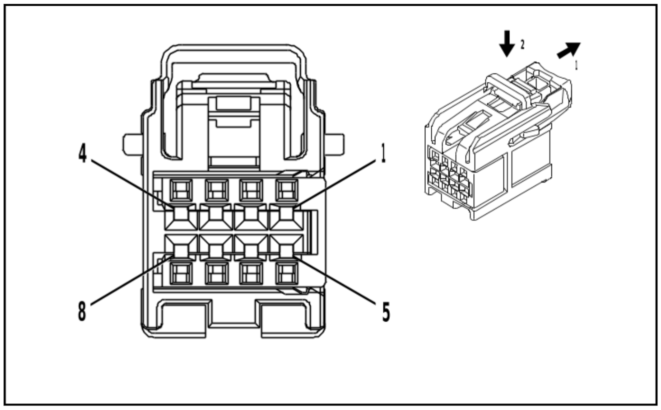
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19354230 | J-35616-64B (L-BU) | J-38125-215A |

## K182 Parking Assist Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / WH | (1) 4740 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 4986 | (2) AUTOSAR CAN Bus [-] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU | (3) 4987 | (3) AUTOSAR CAN Bus [+] 1 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU | (4) 4987 | (4) AUTOSAR CAN Bus [+] 1 Serial Data | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 1450 | (6) Ground | (6) I | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) AUTOSAR CAN Bus [-] 1 Serial Data | (8) I | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) BU | (9) 4987 | (9) AUTOSAR CAN Bus [+] 1 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) WH | (10) 4986 | (10) AUTOSAR CAN Bus [-] 1 Serial Data | (10) I | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |

**K182 Parking Assist Control Module X2**



4232228

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

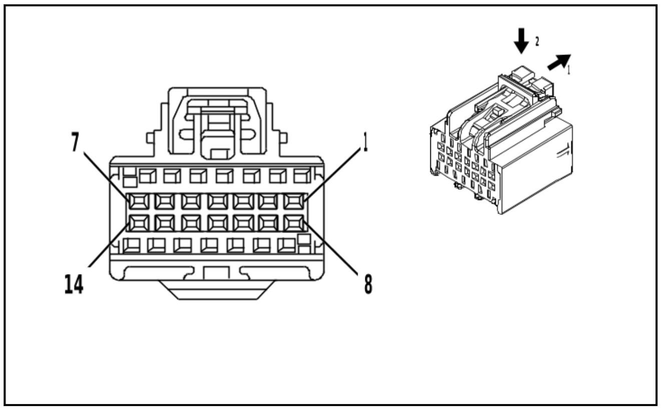
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K182 Parking Assist Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 3157 | (1) Right Rear Advanced Parking Assist Side Object Sensor Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 2377 | (2) Right Rear Middle Parking Assist Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 2375 | (3) Left Rear Outer Parking Assist Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 2374 | (4) Object Sensor Voltage Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / VT | (5) 2378 | (5) Right Rear Outer Parking Assist Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) YE / BU | (6) 2376 | (6) Left Rear Middle Parking Assist Sensor Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) GN | (7) 3156 | (7) Left Rear Advanced Parking Assist Side Object Sensor Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BK / GY | (8) 2379 | (8) Object Sensor Low Reference | (8) I | (8) — |

### K182 Parking Assist Control Module X3



4547098

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 7289-2897-90
- Service Connector: 19354933
- Description: 14-Way F 0.64 Kaizen Series( BU)

## Terminal Part Information

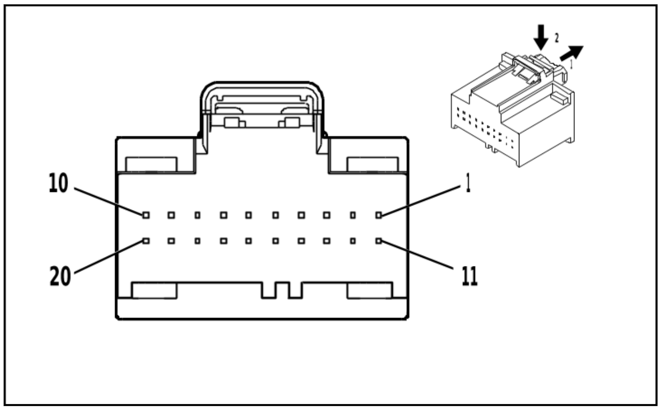
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19303553 | J-35616-64B (L-BU) | J-38125-215A |

## K182 Parking Assist Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / GY | (1) 4104 | (1) AUTOSAR CAN Bus [-] 8 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU / GY | (2) 4105 | (2) AUTOSAR CAN Bus [+] 8 Serial Data | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) GY | (4) 3154 | (4) Left Front Advanced Parking Assist Side Object Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / GY | (5) 5216 | (5) Left Front Middle Parking Assist Sensor | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / GY | (6) 5217 | (6) Right Front Outer Parking Assist Sensor | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BN | (7) 6581 | (7) Front Parking Assist Display Control | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH / GY | (8) 4104 | (8) AUTOSAR CAN Bus [-] 8 Serial Data | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / GY | (9) 4105 | (9) AUTOSAR CAN Bus [+] 8 Serial Data | (9) I | (9) — |
| 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.5 | (11) VT / WH | (11) 5215 | (11) Left Front Outer Parking Assist Sensor | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) VT / GY | (12) 5218 | (12) Right Front Middle Parking Assist Sensor | (12) I | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.5 | (13) GN | (13) 3155 | (13) Right Front Advanced Parking Assist Side Object Sensor Signal | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BK / BU | (14) 5214 | (14) Front Parking Assist Sensor Low Reference | (14) I | (14) — |

### K183 UHF Short Range Low Energy Remote Control Access Transceiver (( BOR / BOY ) - AZ3)



5112891

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 31410-0205
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 0.64 Series( BK)

## Terminal Part Information

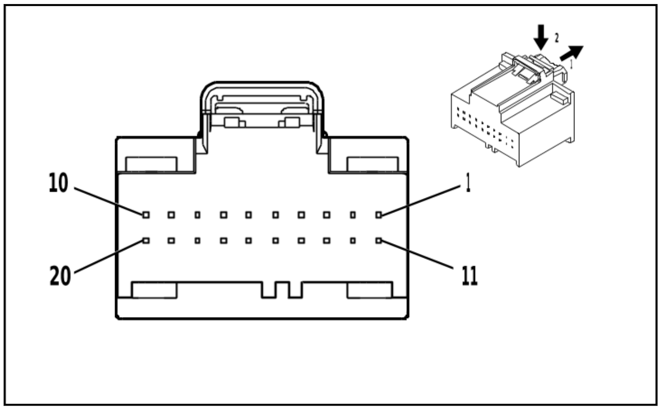
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K183 UHF Short Range Low Energy Remote Control Access Transceiver (( BOR / BOY ) - AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / BK | (1) 2738 | (1) Near Field Communication Module LIN Bus 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / BN | (2) 11326 | (2) Virtual Key Private CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / YE | (3) 11325 | (3) Virtual Key Private CAN Bus [-] Serial Data | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) BU / WH | (6) 4985 | (6) AUTOSAR CAN Bus [+] 5 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BU / YE | (7) 4984 | (7) AUTOSAR CAN Bus [-] 5 Serial Data | (7) I | (7) — |
| 8 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BU / BN | (12) 11326 | (12) Virtual Key Private CAN Bus [+] Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) WH / YE | (13) 11325 | (13) Virtual Key Private CAN Bus [-] Serial Data | (13) I | (13) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.5 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.5 | (17) BU / YE | (17) 4984 | (17) AUTOSAR CAN Bus [-] 5 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / WH | (18) 1351 | (18) Signal Ground | (18) I | (18) — |
| 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.5 | (20) RD / VT | (20) 6340 | (20) Battery Positive Voltage | (20) I | (20) — |

### K183 UHF Short Range Low Energy Remote Control Access Transceiver (AZ3 & ( BOR / BOY ))



5112891

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 31410-0205
- Service Connector: Service by Harness - See Part Catalog
- Description: 20-Way F 0.64 Series( BK)

## Terminal Part Information

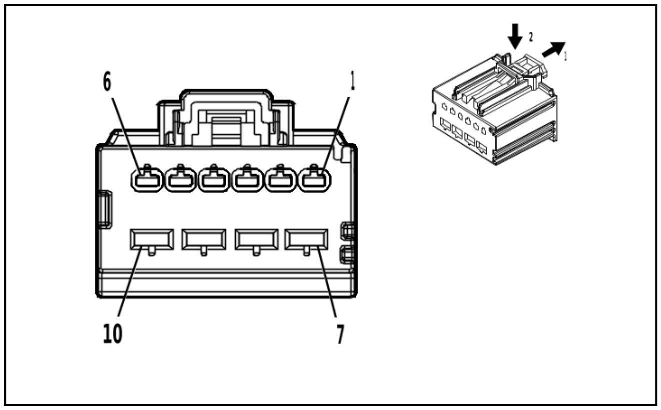
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K183 UHF Short Range Low Energy Remote Control Access Transceiver (AZ3 & ( BOR / BOY ))

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / BK | (1) 2738 | (1) Near Field Communication Module LIN Bus 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / BN | (2) 11326 | (2) Virtual Key Private CAN Bus [+] Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / YE | (3) 11325 | (3) Virtual Key Private CAN Bus [-] Serial Data | (3) I | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BU / WH | (6) 4985 | (6) AUTOSAR CAN Bus [+] 5 Serial Data | (6) I | (6) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.35 | (7) BU / YE | (7) 4984 | (7) AUTOSAR CAN Bus [-] 5 Serial Data | (7) I | (7) — |
| 8 - 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BU / BN | (12) 11326 | (12) Virtual Key Private CAN Bus [+] Serial Data | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) WH / YE | (13) 11325 | (13) Virtual Key Private CAN Bus [-] Serial Data | (13) I | (13) — |
| 14 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.5 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |
| (17) 17 | (17) 0.5 | (17) BU / YE | (17) 4984 | (17) AUTOSAR CAN Bus [-] 5 Serial Data | (17) I | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / WH | (18) 1351 | (18) Signal Ground | (18) I | (18) — |
| 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.5 | (20) RD / VT | (20) 6340 | (20) Battery Positive Voltage | (20) I | (20) — |

### K194 Rear Gate Module X1 (TB5 / TCP)



5035058

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 31372-1600
- Service Connector: 13525907
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

## Terminal Part Information

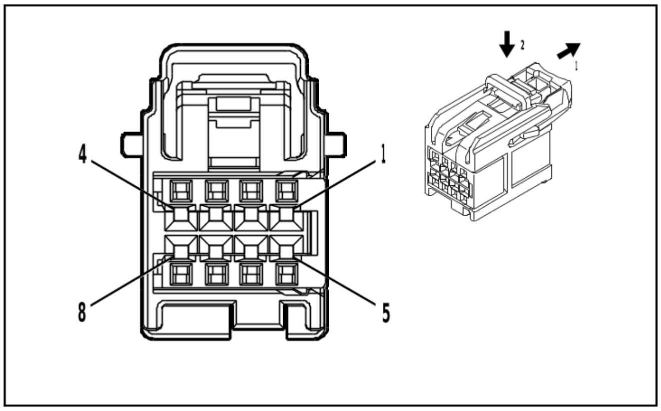
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85544080 | J-35616-4A (PU) | J-38125-11A |

## K194 Rear Gate Module X1 (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) RD / BN | (7) 3842 | (7) Battery Positive Voltage | (7) I | (7) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 8 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 2.5 | (10) BK | (10) 2050 | (10) Ground | (10) I | (10) — |

### K194 Rear Gate Module X2 (TB5 / TCP)



4935776

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series( BK)

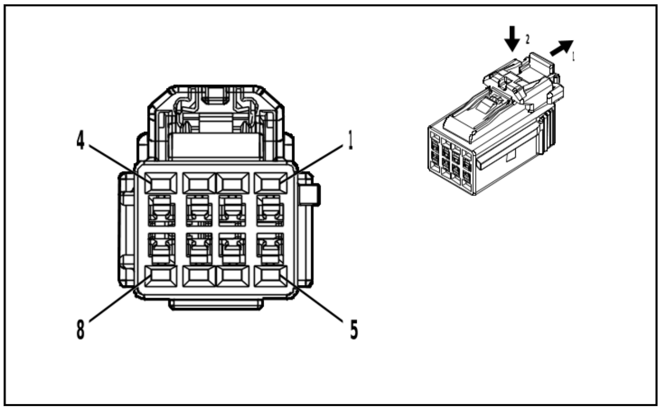
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K194 Rear Gate Module X2 (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 4100 | (2) AUTOSAR CAN Bus [-] 4 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH | (3) 4100 | (3) AUTOSAR CAN Bus [-] 4 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / VT | (4) 4101 | (4) AUTOSAR CAN Bus [+] 4 Serial Data | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) BU / VT | (6) 4101 | (6) AUTOSAR CAN Bus [+] 4 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 4100 | (7) AUTOSAR CAN Bus [-] 4 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / VT | (8) 4101 | (8) AUTOSAR CAN Bus [+] 4 Serial Data | (8) I | (8) — |

## K194 Rear Gate Module X3 (TB5 / TCP)



5086387

**Connector Part Information**

- Harness Type: Liftgate Jumper
- OEM Connector: 13533339
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

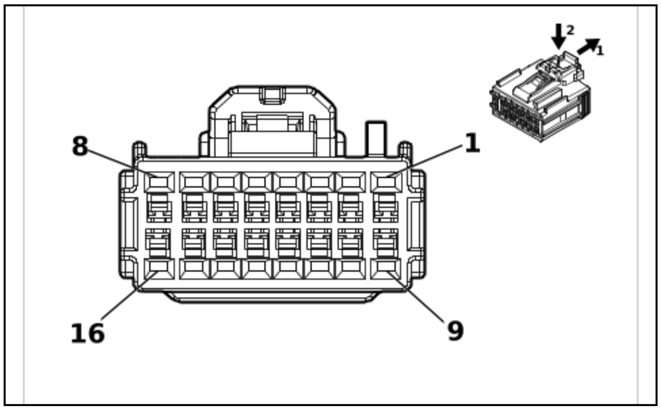
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K194 Rear Gate Module X3 (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 4689 | (1) Rear Closure Open/Close Motor Open Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) — | (3) BN / YE | (3) 4686 | (3) Rear Closure Position Sensor Signal 2 | (3) I | (3) — |
| (4) 4 | (4) — | (4) BN / RD | (4) 4683 | (4) Rear Closure Position Sensor Voltage Reference | (4) I | (4) — |
| (5) 5 | (5) — | (5) BN / WH | (5) 4690 | (5) Rear Closure Open/Close Motor Close Control | (5) I | (5) — |
| (6) 6 | (6) — | (6) BK / GN | (6) 4687 | (6) Rear Closure Position Sensor Low Reference | (6) I | (6) — |
| (7) 7 | (7) — | (7) BU / WH | (7) 4685 | (7) Rear Closure Position Sensor Signal 1 | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

## K194 Rear Gate Module X4 (TB5 / TCP)



6074391

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9012
- Service Connector: 13541574
- Description: 16-Way F 1.2 MCON Series( BK)

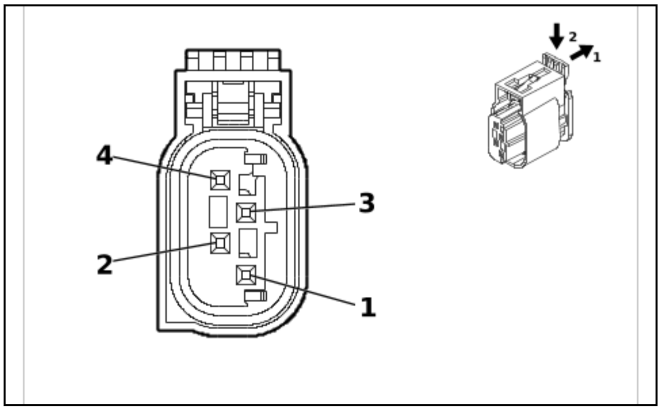
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19371240 | J-35616-12 (BU) | J-38125-215A |
| II | 84962854 | J-35616-12 (BU) | J-38125-215A |

### K194 Rear Gate Module X4 (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BN | (1) 4681 | (1) Rear Closure Cinch Latch Motor Cinch Control | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) GY / VT | (4) 4678 | (4) Rear Closure Latch Unlatch Status | (4) II | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.35 | (6) WH / GN | (6) 8084 | (6) Rear Closure Latch Neutral Status | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) GY / WH | (8) 4658 | (8) Rear Closure Switch LED Control | (8) II | (8) — |
| (9) 9 | (9) 1 | (9) BU / GY | (9) 4682 | (9) Rear Closure Cinch Latch Motor Release Control | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BK / VT | (10) 4656 | (10) Rear Closure Object Sensor Low Reference | (10) II | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) YE / BK | (13) 8085 | (13) Rear Closure Latch Primary Status | (13) II | (13) — |
| (14) 14 | (14) 0.35 | (14) GY / GN | (14) 6190 | (14) Liftgate Window/Rear Compartment Lid, Exterior Unlatch Signal | (14) II | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) GN | (16) 4657 | (16) Rear Closure Switch Signal | (16) II | (16) — |

## K214 Trailer Tire Pressure Indicator Module (UET)



5215490

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 13655424
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 MTS Series, Sealed( BK)

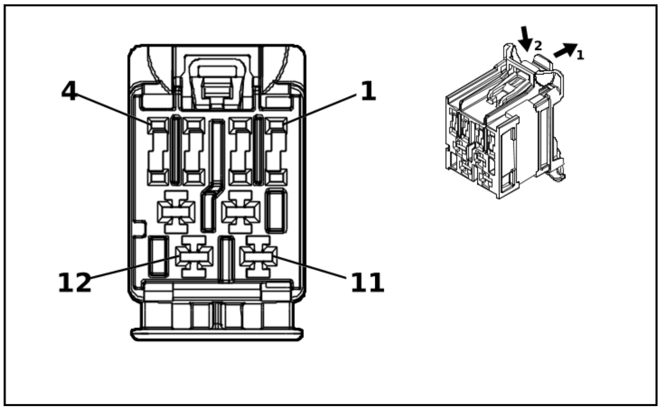
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### K214 Trailer Tire Pressure Indicator Module (UET)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GY | (1) 4840 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1450 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / YE | (3) 2862 | (3) Body Control Module LIN Bus 16 | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## K219 Lighting Control Module X1



5203784

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0003
- Service Connector: 13509990
- Description: 12-Way F 1.2, 2.8 stAK50h Series( L-PU)

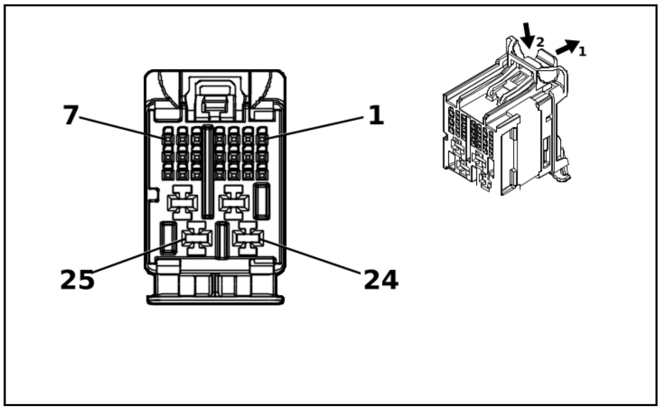
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

### K219 Lighting Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 712 | (1) Left Headlamp Low Beam Control | (1) I | (1) — |
| 2 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) YE / GN | (7) 2024 | (7) Animation Lighting Control | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) WH / GN | (8) 5966 | (8) Approach Lamp Control | (8) I | (8) — |
| (9) 9 | (9) 1 | (9) RD / VT | (9) 7140 | (9) Battery Positive Voltage | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) WH / YE | (10) 1254 | (10) Left Front Park Lamp Control | (10) II | (10) — |
| 11 - 12 | — | — | — | Not Occupied | — | — |

### K219 Lighting Control Module X2



5203807

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0012
- Service Connector: 13534966
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( GY with GY Inner Connector)

## Terminal Part Information

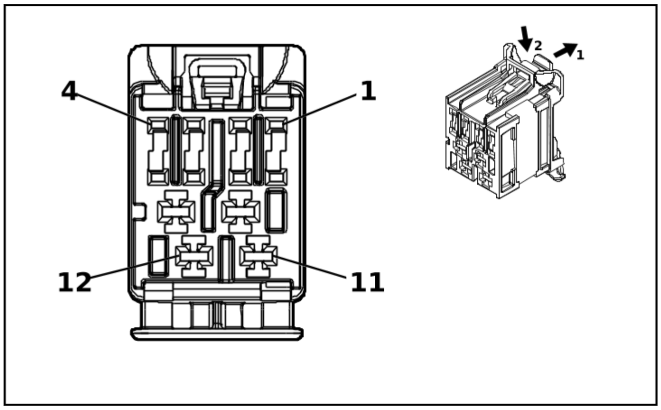
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K219 Lighting Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / YE | (1) 6846 | (1) Rear License Plate Lamp Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / VT | (2) 1315 | (2) Right Front Turn Signal Lamp Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / GY | (3) 2268 | (3) Windshield Washer Relay Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH | (4) 711 | (4) Left Headlamp High Beam Control | (4) I | (4) — |
| 5 - 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) BN / GN | (10) 196 | (10) Windshield Wiper Motor Park Switch Signal | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) VT / BK | (11) 6568 | (11) Front Turn Signal Lamp Feedback Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) GY | (12) 91 | (12) Windshield Wiper Motor Relay Coil Control | (12) I | (12) — |
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) VT | (14) 185 | (14) Low Washer Fluid Indicator Control | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) YE / BU | (16) 318 | (16) Left Rear Trailer Stop/Turn Lamp Control | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) BU / WH | (17) 1314 | (17) Left Front Turn Signal Lamp Control | (17) I | (17) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (18) 18 | (18) 0.35 | (18) WH | (18) 311 | (18) Right Headlamp High Beam Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) WH / BN | (19) 7055 | (19) Auxiliary Park Lamp Relay Control | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) WH / YE | (20) 7545 | (20) Right Front Turn Signal Lamp Feedback Signal | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) WH / VT | (21) 860 | (21) Windshield Wiper Switch High Signal | (21) I | (21) — |
| (22) 22 | (22) 1 | (22) RD / GN | (22) 7740 | (22) Battery Positive Voltage | (22) II | (22) — |
| (23) 23 | (23) 1 | (23) RD / BU | (23) 840 | (23) Battery Positive Voltage | (23) II | (23) — |
| 24 - 25 | — | — | — | Not Occupied | — | — |

**K219 Lighting Control Module X3**



5203797

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160026-0002
- Service Connector: 13509989
- Description: 12-Way F 1.2, 2.8 stAK50h Series( GN)

## Terminal Part Information

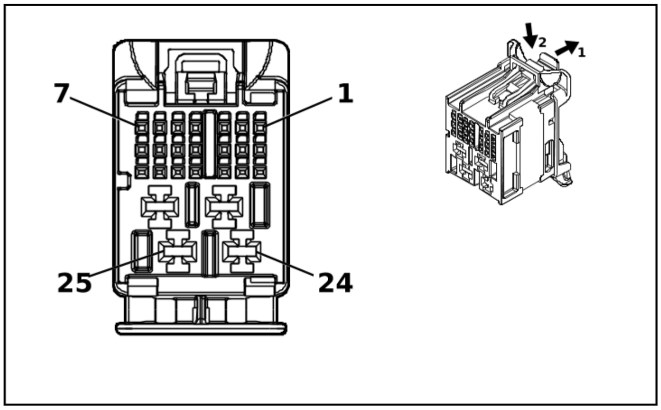
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84729890 | J-35616-12 (BU) | J-38125-215A |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K219 Lighting Control Module X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BN | (1) 10749 | (1) Sequential Turn Lamp Enable Signal | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) YE | (4) 312 | (4) Right Headlamp Low Beam Control | (4) I | (4) — |
| 5 - 8 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 1 | (9) RD / BU | (9) 540 | (9) Battery Positive Voltage | (9) II | (9) — |
| (10) 10 | (10) 1 | (10) RD / BN | (10) 1440 | (10) Battery Positive Voltage | (10) II | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) BU / GN | (12) 1253 | (12) Right Front Park Lamp Control | (12) II | (12) — |

**K219 Lighting Control Module X4**



5203416

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 160027-0015
- Service Connector: 13534969
- Description: 25-Way F 0.5 MQS, 2.8 MCP Series( PU with GY Inner Connector)

## Terminal Part Information

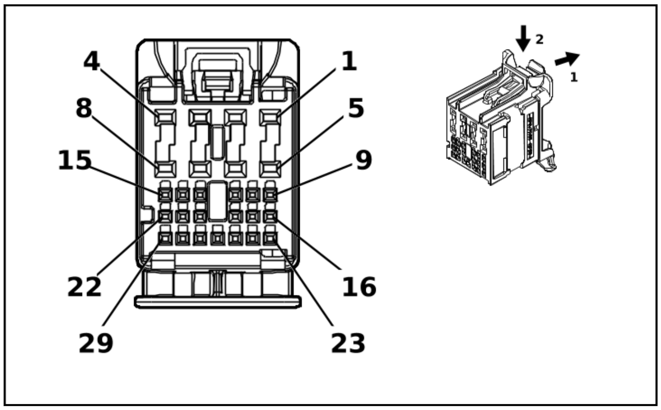
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 87814662 | J-35616-35 (VT) | J-38125-557 |

## K219 Lighting Control Module X4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BU / GN | (3) 4103 | (3) AUTOSAR CAN Bus [+] 9 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / GN | (4) 4102 | (4) AUTOSAR CAN Bus [-] 9 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / GN | (5) 4103 | (5) AUTOSAR CAN Bus [+] 9 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / GN | (6) 4102 | (6) AUTOSAR CAN Bus [-] 9 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / BU | (7) 6311 | (7) Cruise/ETC/TCC Brake Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) VT / YE | (8) 8868 | (8) Police Liftgate Strobe Enable 1 Signal | (8) I | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.35 | (9) VT / GN | (9) 8869 | (9) Police Liftgate Strobe Rear On OFF Control | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) WH / GN | (10) 4102 | (10) AUTOSAR CAN Bus [-] 9 Serial Data | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) BU / GN | (11) 4103 | (11) AUTOSAR CAN Bus [+] 9 Serial Data | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BU / GN | (12) 8864 | (12) Police Tail Lamp Red/Red Alternate Flash Enable Signal | (12) I | (12) — |
| (13) 13 | (13) 0.35 | (13) GY / GN | (13) 8865 | (13) Police Tail Lamp Red/White Alternate Flash Enable Signal | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) GN | (14) 8863 | (14) Police High Beam Alternate Flash Enable Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) VT / BU | (15) 4001 | (15) Left Rear Door Lock Switch Lock Control | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) WH / YE | (16) 4002 | (16) Left Rear Door Lock Switch Unlock Control | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) GN / BN | (17) 4003 | (17) Right Rear Door Lock Switch Lock Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / GY | (18) 4004 | (18) Right Rear Door Lock Switch Unlock Control | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) GY / WH | (19) 10137 | (19) Radio Audio Mute Police Signal | (19) I | (19) — |
| (20) 20 | (20) 0.35 | (20) BU / YE | (20) 2279 | (20) Liftgate Window Ajar Switch Signal | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) VT / GY | (21) 1303 | (21) Liftgate Ajar Switch Signal 1 | (21) I | (21) — |
| (22) 22 | (22) 1 | (22) RD / BN | (22) 1140 | (22) Battery Positive Voltage | (22) II | (22) — |
| (23) 23 | (23) 1 | (23) BK / WH | (23) 1151 | (23) Signal Ground | (23) II | (23) — |
| (24) 24 | (24) 1 | (24) RD / GN | (24) 1540 | (24) Battery Positive Voltage | (24) II | (24) — |
| (25) 25 | (25) 1 | (25) BK / WH | (25) 1151 | (25) Signal Ground | (25) II | (25) — |

## K219 Lighting Control Module X5



5203373

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 160029-0013
- Service Connector: 13534975
- Description: 29-Way F 0.5 NANO, 1.2 MCON, stAK50h Series( BU with GY Inner Connector)

### Terminal Part Information

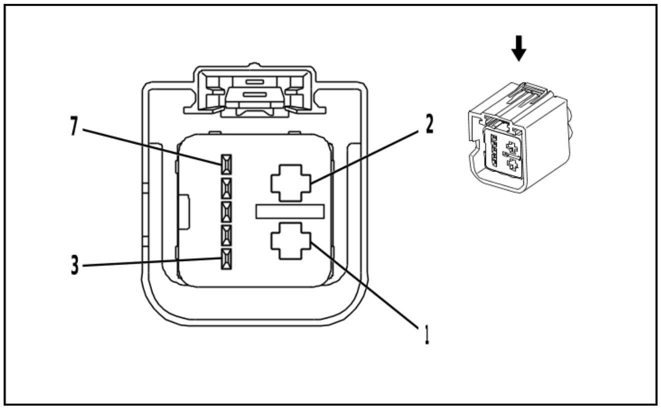
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370262 | EL-35616-58 (BK) | EL-38125-58 |
| II | 84729890 | J-35616-12 (BU) | J-38125-215A |

### K219 Lighting Control Module X5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 8866 | (1) Police Liftgate Strobe Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / GY | (2) 6995 | (2) Right Rear Park Lamp Control | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / GY | (3) 5061 | (3) Left Front Fog Lamp Control | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / VT | (4) 1335 | (4) Right Rear Turn Signal Lamp Control 2 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) GN / WH | (5) 24 | (5) Backup Lamp Control | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / BU | (6) 6993 | (6) Left Rear Park Lamp Control | (6) II | (6) — |
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) BU / WH | (8) 1334 | (8) Left Rear Turn Signal Lamp Control 2 | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) GN / GY | (9) 2115 | (9) Right Turn Signal Lamp Control 2 | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) WH / GY | (10) 2114 | (10) Left Turn Signal Lamp Control 2 | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) GY | (11) 1715 | (11) Windshield Wiper Switch High Signal | (11) I | (11) — |
| (13) 13 | (13) 0.35 | (13) BU / BN | (13) 7539 | (13) Right Front DRL Control | (13) I | (13) — |
| 14 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (15) 15 | (15) 0.35 | (15) GY / GN | (15) 6190 | (15) Liftgate Window/Rear Compartment Lid, Exterior Unlatch Signal | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) WH / YE | (16) 7541 | (16) Right Rear Stop Lamp Control | (16) I | (16) — |
| 17 | — | — | — | Not Occupied | — | — |
| (18) 18 | (18) 0.35 | (18) VT / WH | (18) 1139 | (18) Run/Crank Ignition 1 Voltage | (18) I | (18) — |
| 20 - 21 | — | — | — | Not Occupied | — | — |
| (22) 22 | (22) 0.35 | (22) GN / WH | (22) 2270 | (22) Rear Window Washer Relay Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) WH / VT | (23) 6567 | (23) Rear Turn Signal Lamp Feedback Signal | (23) I | (23) — |
| (24) 24 | (24) 0.35 | (24) WH / BK | (24) 7544 | (24) Right Rear Turn Signal Lamp Feedback Signal | (24) I | (24) — |
| (25) 25 | (25) 0.35 | (25) BN / YE | (25) 820 | (25) Center High Mounted Stop Lamp Supply Voltage | (25) I | (25) — |
| (26) 26 | (26) 0.35 | (26) GN / BN | (26) 319 | (26) Right Rear Trailer Stop/Turn Lamp Control | (26) I | (26) — |
| (27) 27 | (27) 0.35 | (27) BU / BN | (27) 38 | (27) Backup Lamp Relay Control | (27) I | (27) — |
| (28) 28 | (28) 0.35 | (28) GY / YE | (28) 7542 | (28) Left Rear Stop Lamp Control | (28) I | (28) — |
| (29) 29 | (29) 0.35 | (29) GY / BU | (29) 7538 | (29) Left Front DRL Control | (29) I | (29) — |

### K230 Front Floor Console Control Module (DCH)



2282932

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-1732115-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed( GY)

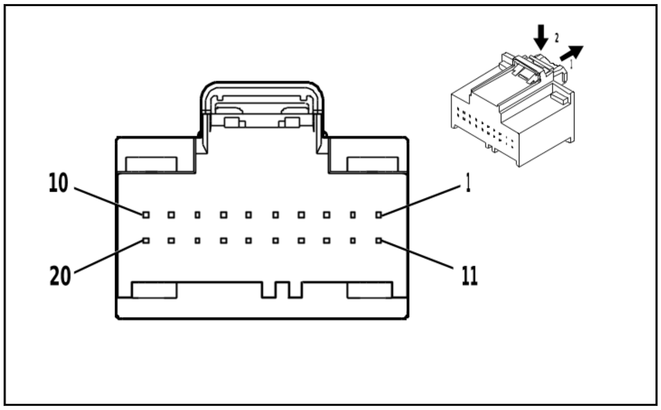
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## K230 Front Floor Console Control Module (DCH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 1250 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 1 | (2) RD / VT | (2) 8640 | (2) Battery Positive Voltage | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) GN / VT | (4) 2857 | (4) Body Control Module LIN Bus 11 | (4) II | (4) — |
| 5 - 7 | — | — | — | Not Occupied | — | — |

### K299R Audio/Video Interface Rear Module X1 (UW9)



5112891

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 31410-0205
- Service Connector: 13525990
- Description: 20-Way F 0.64 Series( BK)

## Terminal Part Information

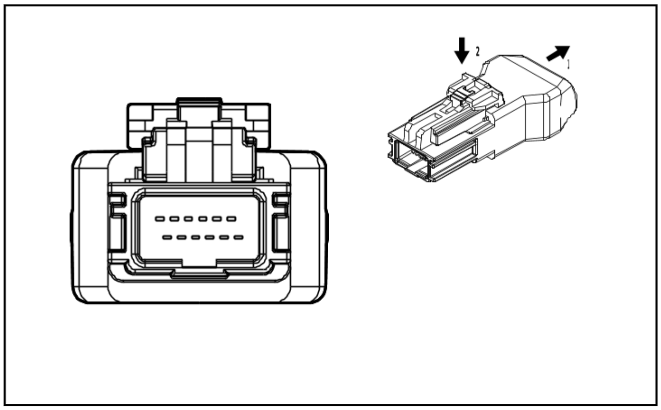
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13584547 | J-35616-64B (L-BU) | J-38125-215A |
| II | Service by Cable | J-35616-64B (L-BU) | J-38125-215A |

## K299R Audio/Video Interface Rear Module X1 (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / BN | (1) 3640 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 4985 | (3) AUTOSAR CAN Bus [+] 5 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / YE | (4) 4984 | (4) AUTOSAR CAN Bus [-] 5 Serial Data | (4) I | (4) — |
| 5 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 8580 | (9) Automotive Audio Bus A2B Serial Data 1 [+] | (9) II | (9) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.35 | (10) GN | (10) 8579 | (10) Automotive Audio Bus A2B Serial Data 1 [-] | (10) II | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.75 | (12) BK / WH | (12) 1451 | (12) Signal Ground | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BU / WH | (13) 4985 | (13) AUTOSAR CAN Bus [+] 5 Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BU / YE | (14) 4984 | (14) AUTOSAR CAN Bus [-] 5 Serial Data | (14) I | (14) — |
| 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.35 | (16) VT | (16) 7212 | (16) Ethernet Bus 5 [-] | (16) II | (16) — |
| (17) 17 | (17) 0.35 | (17) VT / WH | (17) 7213 | (17) Ethernet Bus 5 [+] | (17) II | (17) — |
| 18 | — | — | — | Not Occupied | — | — |
| (19) 19 | (19) 0.35 | (19) GN | (19) 8579 | (19) Automotive Audio Bus A2B Serial Data 1 [-] | (19) II | (19) — |
| (20) 20 | (20) 0.35 | (20) WH | (20) 8580 | (20) Automotive Audio Bus A2B Serial Data 1 [+] | (20) II | (20) — |

### K299R Audio/Video Interface Rear Module X2 (UW9)



4584321

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 111146-3307
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( GY)

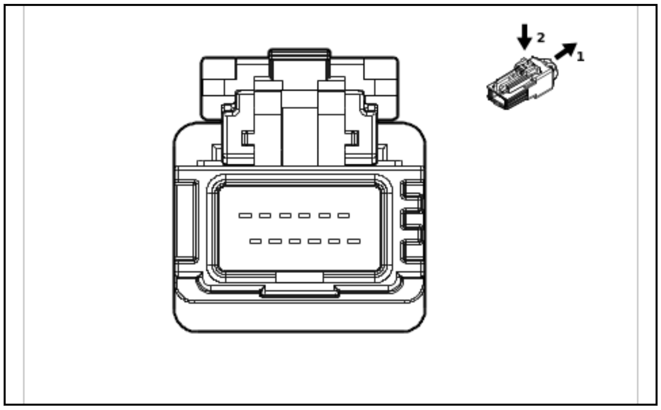
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K299R Audio/Video Interface Rear Module X2 (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 12 | — | — | — | Not Occupied | — | — |
| GY | 0 | — | LVDS | Low Voltage Differential Signaling Cable | I | — |

### K299R Audio/Video Interface Rear Module X3 (UW9)



6186830

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 13551157
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( BN)

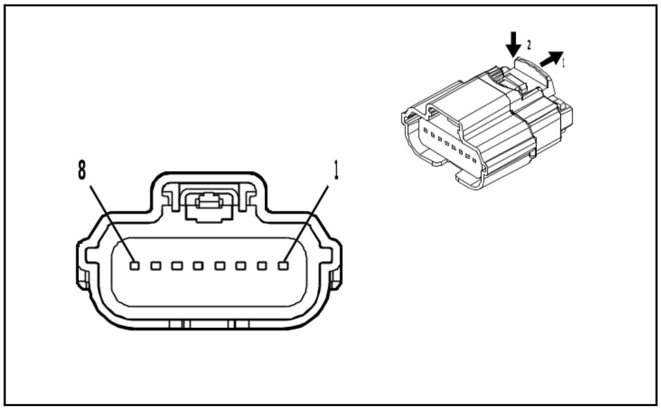
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## K299R Audio/Video Interface Rear Module X3 (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | LVDS | — | Rear Seat Infotainment Auxiliary Audio/Video Jack LVDS (Low Voltage Differential Signaling) Low Reference | I | — |

## K313 Occupant Presence Module



4708234

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 13526714
- Service Connector: 84677313
- Description: 8-Way F 64 Series, Sealed( BK)

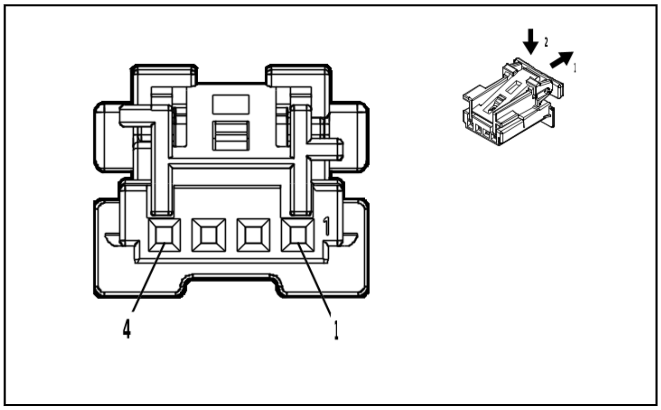
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## K313 Occupant Presence Module

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 1351 | (1) Signal Ground | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) RD / GN | (4) 11440 | (4) Battery Positive Voltage | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) WH / GN | (7) 4102 | (7) AUTOSAR CAN Bus [-] 9 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BU / GN | (8) 4103 | (8) AUTOSAR CAN Bus [+] 9 Serial Data | (8) I | (8) — |

## M4P Programmable Air Inlet Valve Actuator



4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

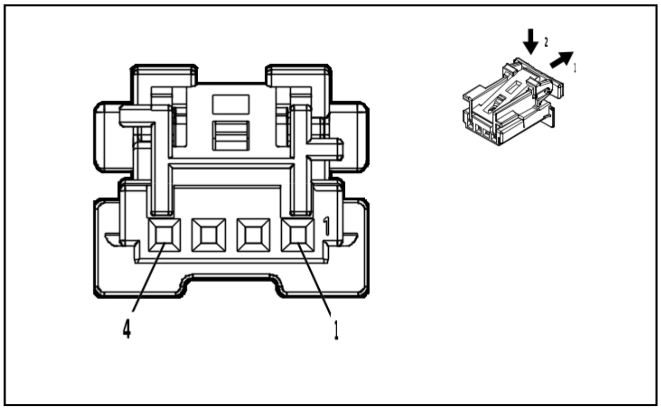
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M4P Programmable Air Inlet Valve Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| (3) 3 | (3) — | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) — | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

### M6BP Rear Programmable Temperature Valve Actuator



4997407

**Connector Part Information**

- Harness Type: Auxiliary Heater and Air Conditioning Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

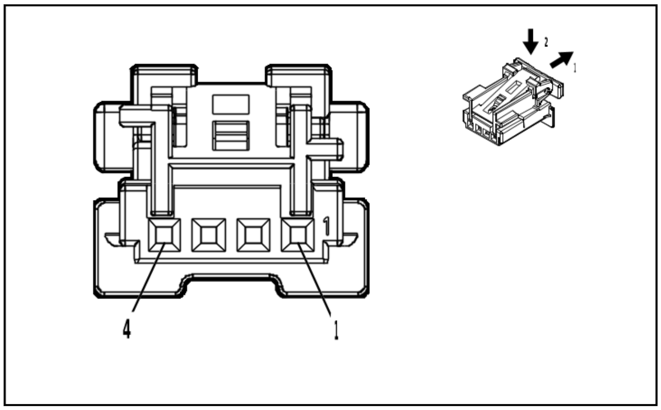
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M6BP Rear Programmable Temperature Valve Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 1450 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 2853 | (2) Body Control Module LIN Bus 7 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) RD / WH | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

## M6PL Programmable Temperature Valve Actuator - Left



4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

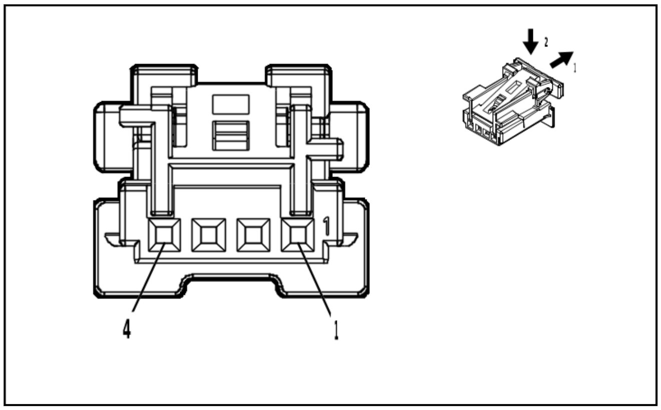
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### M6PL Programmable Temperature Valve Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| (3) 3 | (3) — | (3) BK | (3) 1050 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) — | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

## M6PR Programmable Temperature Valve Actuator - Right



4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

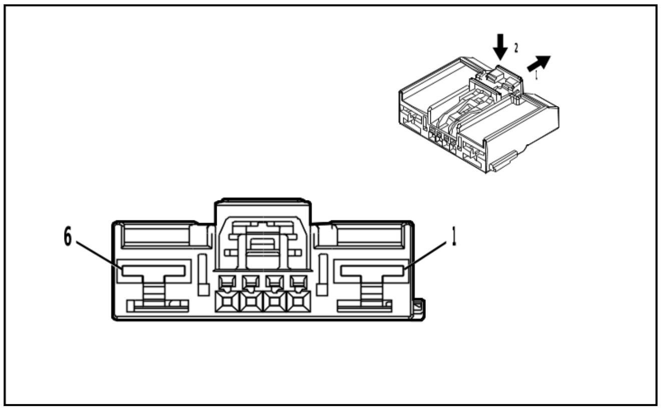
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### M6PR Programmable Temperature Valve Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) — | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

## M8 Blower Motor



4650258

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-7139-30
- Service Connector: 19356432
- Description: 6-Way F 0.64, 6.3 Series( BK)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

### M8 Blower Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) RD / GY | (1) 2042 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BU / GY | (2) 754 | (2) Blower Motor Speed Control | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BU | (3) 761 | (3) Blower Speed Feedback Signal | (3) II | (3) — |
| 4 - 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 5 | (6) BK | (6) 1050 | (6) Ground | (6) I | (6) — |

## M8B Blower Motor - Rear

—

**Connector Part Information**

- Harness Type: Rear Blower Motor
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way

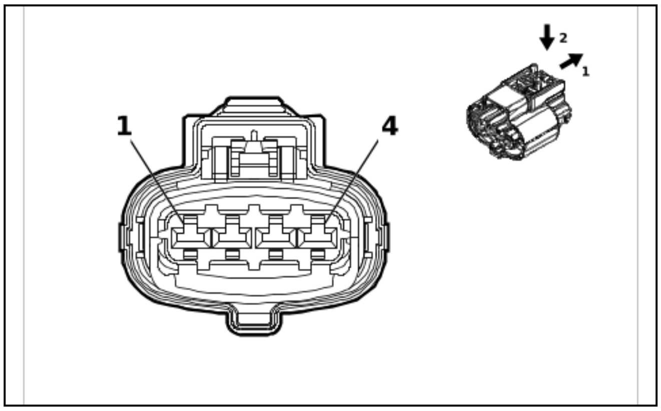
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M8B Blower Motor - Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BU / BK | (1) 5988 | (1) Rear Blower Motor Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) GY / BN | (2) 101 | (2) Blower Motor Control 2 | (2) I | (2) — |

### M10 Charge Air Cooler Coolant Pump (LZ0)



5869064

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35810340
- Service Connector: 19371209
- Description: 4-Way F 2.8 CTS Series, Sealed( BK)

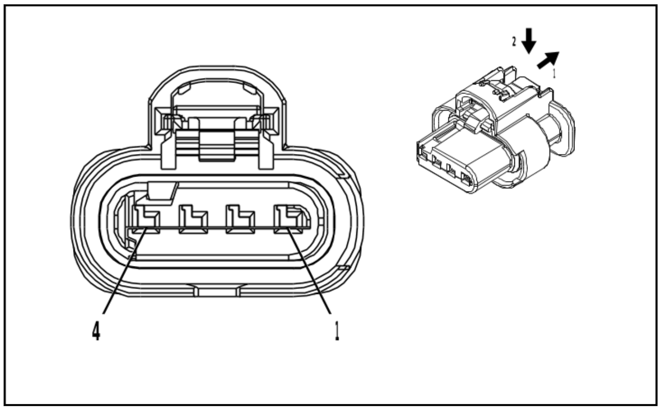
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## M10 Charge Air Cooler Coolant Pump (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) VT / BU | (1) 5294 | (1) Powertrain Main Relay Fused Supply Voltage 5 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 4621 | (2) Engine Control Module LIN Bus 1 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 1 | (4) BK | (4) 6550 | (4) Ground | (4) I | (4) — |

### M26 Front Drive Axle Actuator (NPO / NQH)



4210809

**Connector Part Information**

- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 1-2296696-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

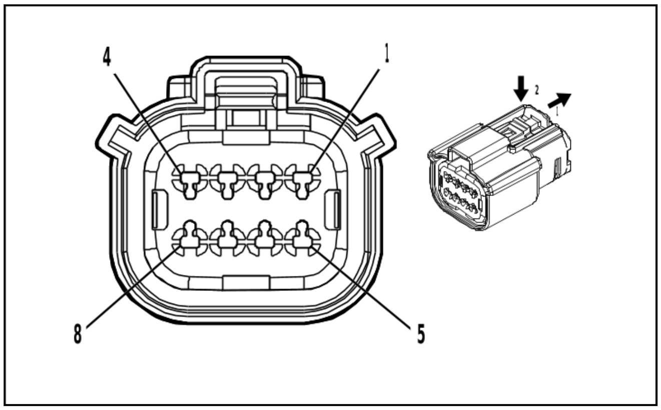
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## M26 Front Drive Axle Actuator (NPO / NQH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN | (1) 8016 | (1) Secondary Axle Motor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / BK | (2) 1570 | (2) Front Axle Actuator Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / WH | (3) 1695 | (3) 4WD Locked Range Indicator Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 450 | (4) Ground | (4) I | (4) — |

## M31L Liftgate Power Assist Actuator - Left (TB5 / TCP)



4846407

**Connector Part Information**

- Harness Type: Liftgate Jumper
- OEM Connector: 13520074
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 MX Series, Sealed( BK)

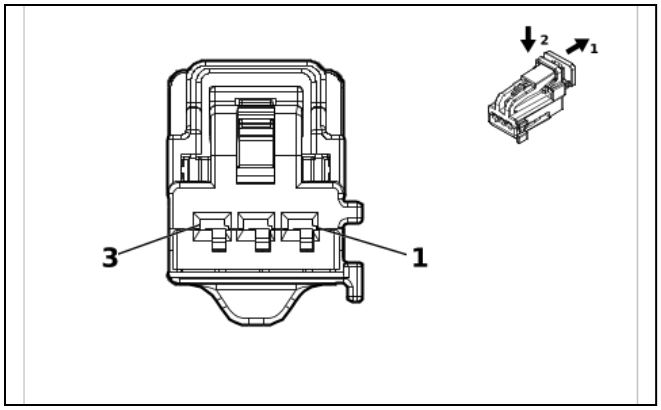
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M31L Liftgate Power Assist Actuator - Left (TB5 / TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 4689 | (1) Rear Closure Open/Close Motor Open Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) — | (3) BN / YE | (3) 4686 | (3) Rear Closure Position Sensor Signal 2 | (3) I | (3) — |
| (4) 4 | (4) — | (4) BN / RD | (4) 4683 | (4) Rear Closure Position Sensor Voltage Reference | (4) I | (4) — |
| (5) 5 | (5) — | (5) BN / WH | (5) 4690 | (5) Rear Closure Open/Close Motor Close Control | (5) I | (5) — |
| (6) 6 | (6) — | (6) BK / GN | (6) 4687 | (6) Rear Closure Position Sensor Low Reference | (6) I | (6) — |
| (7) 7 | (7) — | (7) BU / WH | (7) 4685 | (7) Rear Closure Position Sensor Signal 1 | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

## M33 Liftgate Window Latch



6548001

**Connector Part Information**
- Harness Type: Liftgate Wiring Harness
- OEM Connector: 15509304
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.5 YESC Series( BK)

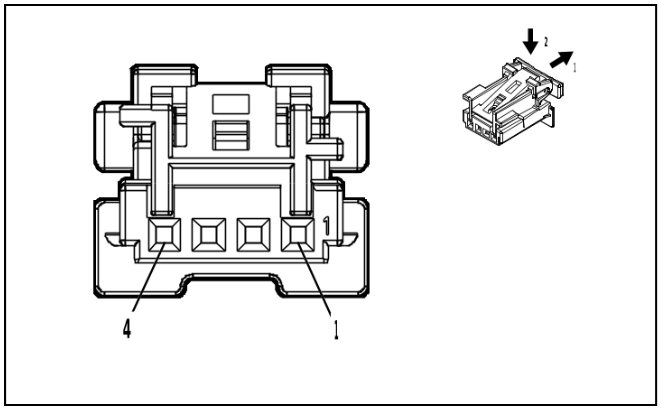
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### M33 Liftgate Window Latch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / GN | (1) 4089 | (1) Rear Closure Motor Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 2279 | (3) Liftgate Window Ajar Switch Signal | (3) I | (3) — |

### M37BP Rear Programmable Mode Valve Actuator



4997407

**Connector Part Information**

- Harness Type: Auxiliary Heater and Air Conditioning Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

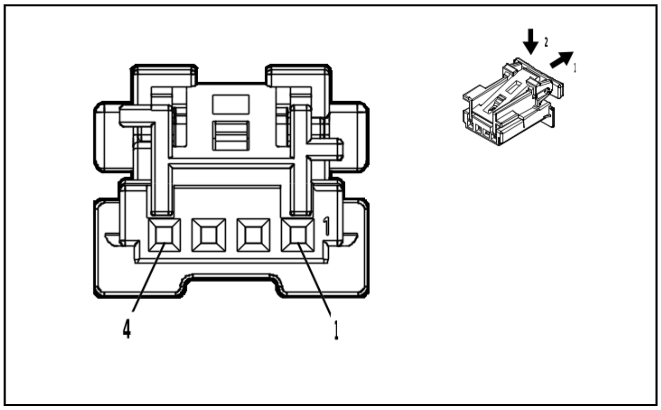
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M37BP Rear Programmable Mode Valve Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 1450 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 2853 | (2) Body Control Module LIN Bus 7 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / WH | (3) 1450 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) RD / WH | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

## M37P Programmable Mode Valve Actuator



4997407

**Connector Part Information**

- Harness Type: Heater Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

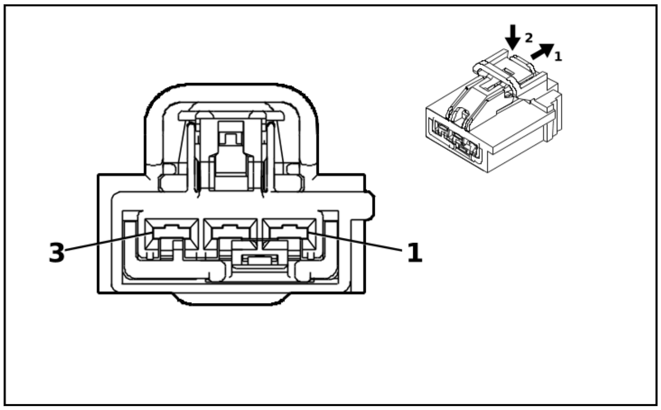
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### M37P Programmable Mode Valve Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 1050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU | (2) 2852 | (2) Body Control Module LIN Bus 6 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) — | (4) RD | (4) 4634 | (4) HVAC Remote Enable Signal | (4) I | (4) — |

### M45 Rear Window Wiper Motor



5215435

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 7289-9738-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 2.8 YESC Series( GY)

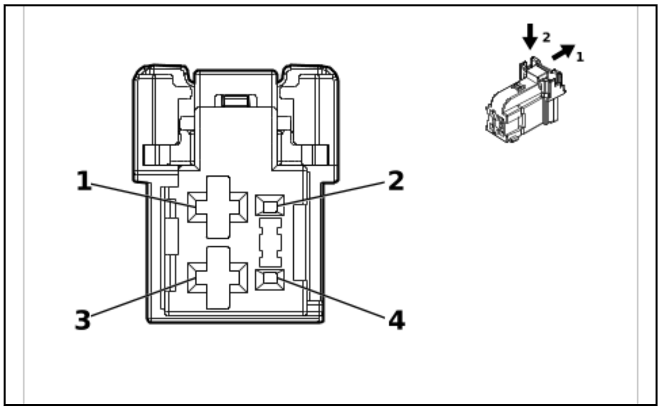
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## M45 Rear Window Wiper Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 2050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BU | (2) 2856 | (2) Body Control Module LIN Bus 10 | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) RD / YE | (3) 3040 | (3) Battery Positive Voltage | (3) I | (3) — |

### M50D Front Seat Tilt Adjuster Actuator - Driver



5410027

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

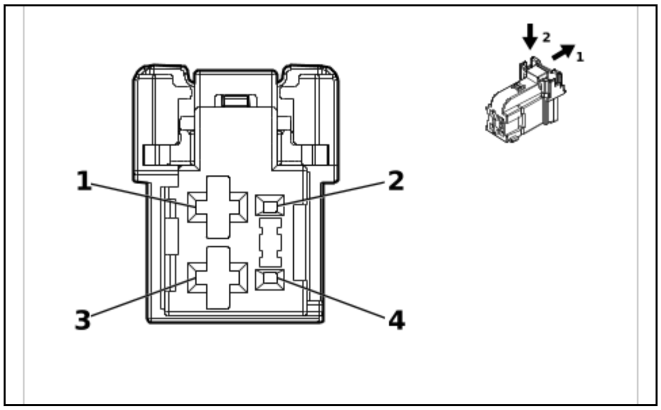
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M50D Front Seat Tilt Adjuster Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BU / VT | (1) 287 | (1) Driver Seat Front Vertical Motor Down Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / BN | (3) 286 | (3) Driver Seat Front Vertical Motor Up Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M50P Front Seat Tilt Adjuster Actuator - Passenger



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

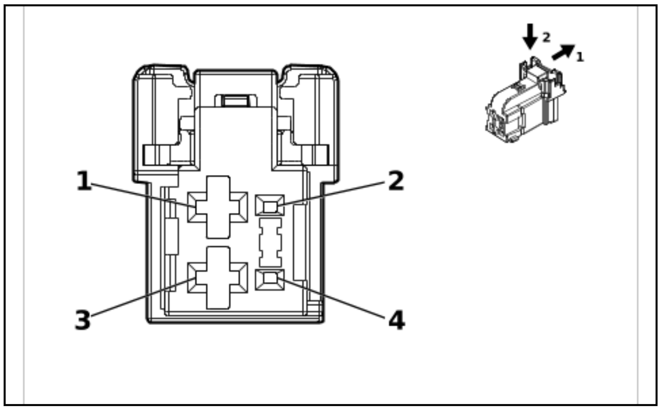
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M50P Front Seat Tilt Adjuster Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / VT | (1) 297 | (1) Passenger Seat Front Vertical Motor Up Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / BU | (3) 298 | (3) Passenger Seat Front Vertical Motor Down Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M51D Front Seat Adjuster Actuator - Driver



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

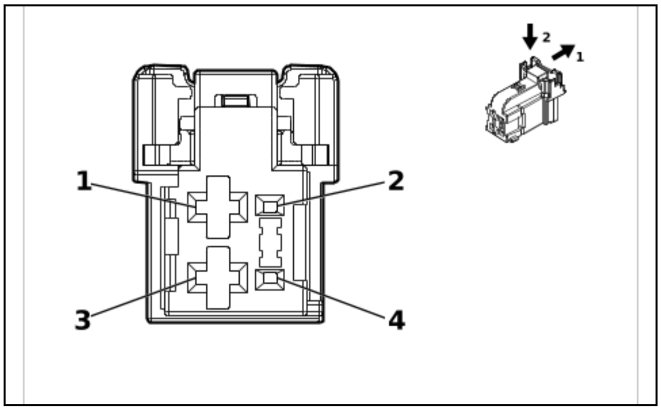
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### M51D Front Seat Adjuster Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GY / GN | (1) 284 | (1) Driver Seat Horizontal Motor Rearward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) YE / BU | (3) 285 | (3) Driver Seat Horizontal Motor Forward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M51P Front Seat Adjuster Actuator - Passenger



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

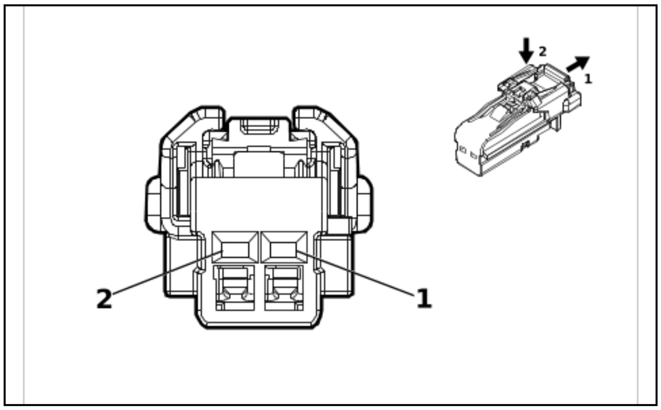
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M51P Front Seat Adjuster Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) YE / BU | (1) 290 | (1) Passenger Seat Horizontal Motor Rearward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) YE / WH | (3) 296 | (3) Passenger Seat Horizontal Motor Forward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M53D Front Seat Back Lumbar Motor - Driver (AL9)



4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

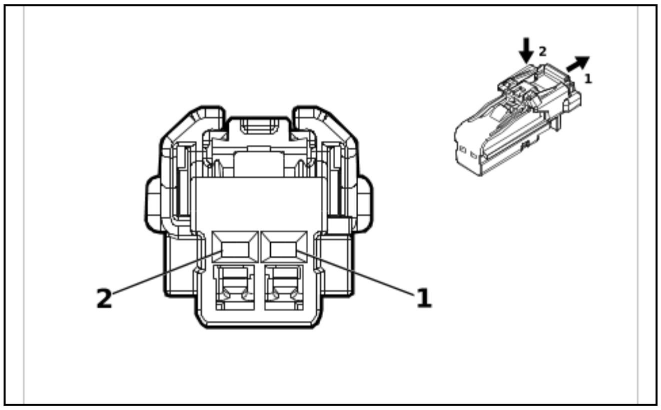
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M53D Front Seat Back Lumbar Motor - Driver (AL9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 611 | (1) Driver Seat Lumbar Support Motor Forward Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT | (2) 610 | (2) Driver Seat Lumbar Support Motor Backward Control | (2) I | (2) — |

### M53P Front Seat Back Lumbar Motor - Passenger (AT9)



4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

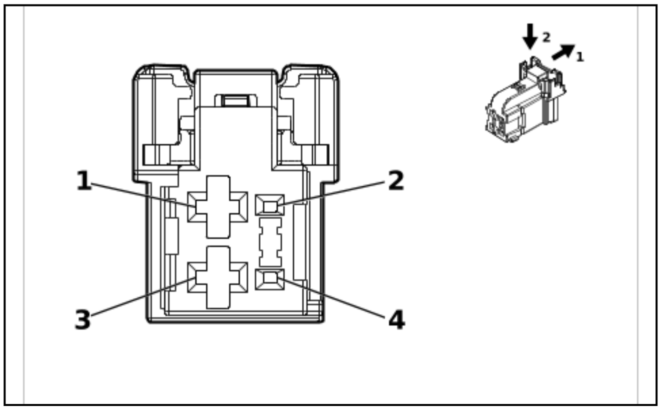
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M53P Front Seat Back Lumbar Motor - Passenger (AT9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 211 | (1) Passenger Seat Lumbar Support Motor Forward Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT | (2) 210 | (2) Passenger Seat Lumbar Support Motor Backward Control | (2) I | (2) — |

### M55D Front Seat Vertical Adjuster Actuator - Driver



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

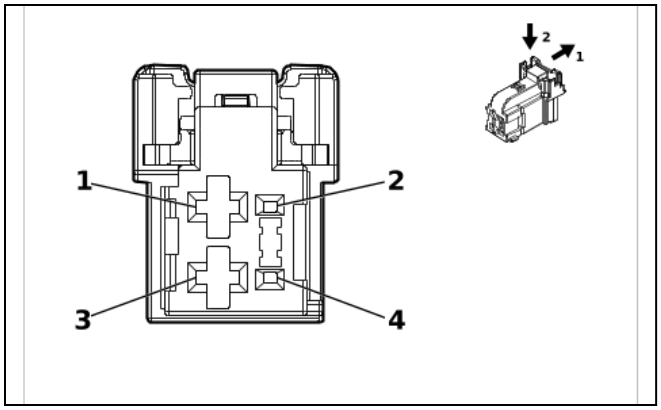
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M55D Front Seat Vertical Adjuster Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GY / BU | (1) 283 | (1) Driver Seat Rear Vertical Motor Down Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) YE | (3) 282 | (3) Driver Seat Rear Vertical Motor Up Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M55P Front Seat Vertical Adjuster Actuator - Passenger



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

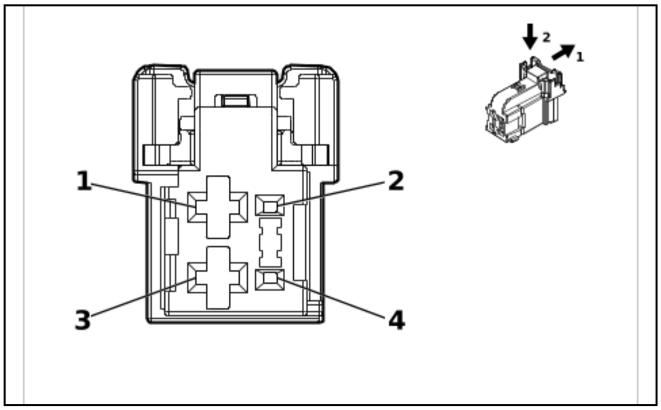
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### M55P Front Seat Vertical Adjuster Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BU / WH | (1) 289 | (1) Passenger Seat Rear Vertical Motor Down Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) GN / WH | (3) 288 | (3) Passenger Seat Rear Vertical Motor Up Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M56D Front Seat Recliner Actuator - Driver



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

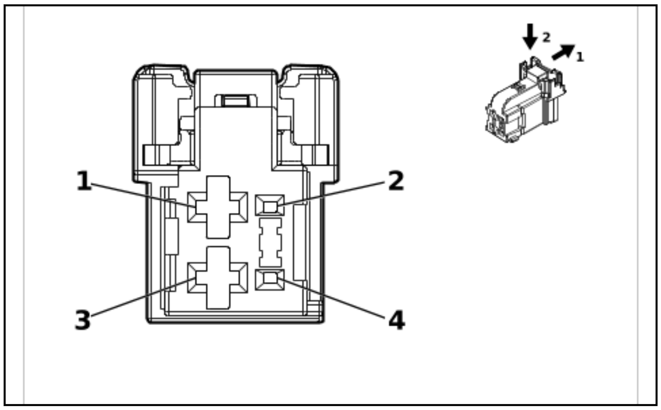
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M56D Front Seat Recliner Actuator - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / YE | (1) 276 | (1) Driver Seat Recline Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) BU / YE | (3) 277 | (3) Driver Seat Recline Motor Rearward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M56P Front Seat Recliner Actuator - Passenger



5410027

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

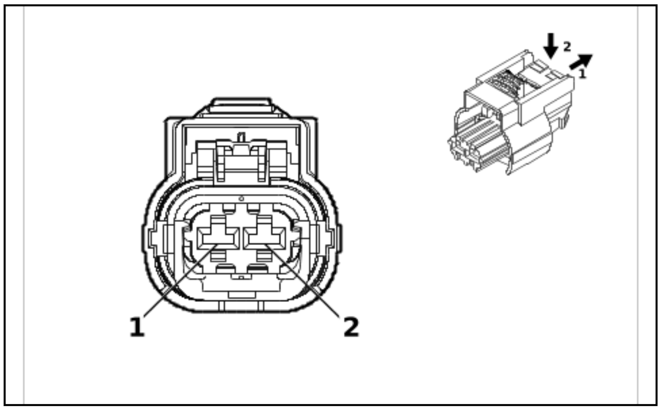
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M56P Front Seat Recliner Actuator - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN | (1) 76 | (1) Passenger Seat Recline Motor Forward Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) BU / BN | (3) 77 | (3) Passenger Seat Recline Motor Rearward Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M64 Starter X1 (L84 / L87)



4992524

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

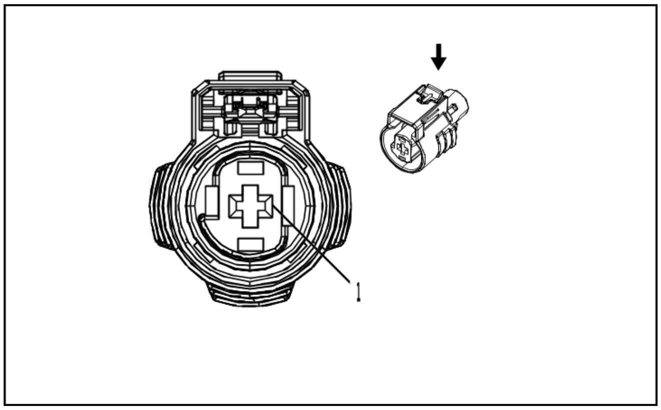
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## M64 Starter X1 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) YE | (1) 6 | (1) Starter Solenoid Crank Ignition Voltage | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) YE / GN | (2) 4358 | (2) Starter Pinion Solenoid Voltage | (2) I | (2) — |

### M64 Starter X1 (LZ0)



2717134

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2098198-5
- Service Connector: 19300471
- Description: 1-Way F 2.8 MCP Series, Sealed( BK)

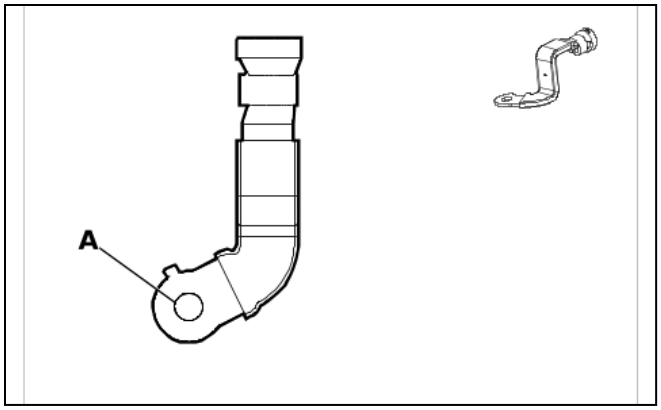
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## M64 Starter X1 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) YE | (1) 6 | (1) Starter Solenoid Crank Ignition Voltage | (1) I | (1) — |

### M64 Starter X2



6458097

**Connector Part Information**

- Harness Type: Starter Solenoid Cable
- OEM Connector: 84406835
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

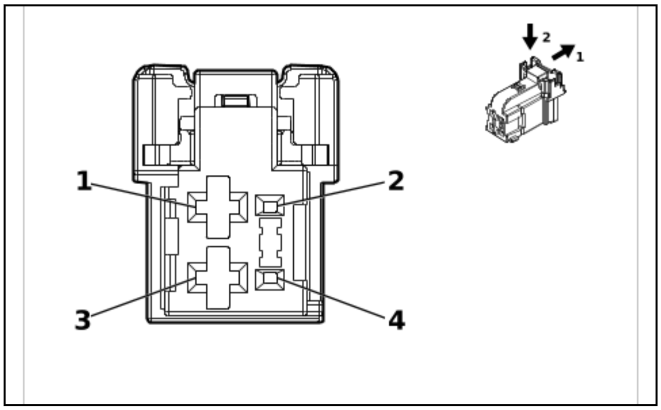
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M64 Starter X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 35 | RD / YE | 2 | Battery Positive Voltage | I | L84/ L87 |

### M65 Steering Column Telescope Actuator



5410027

**Connector Part Information**

- Harness Type: Steering Column Tilt and Telescope Wheel Actuator Motor Harness
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

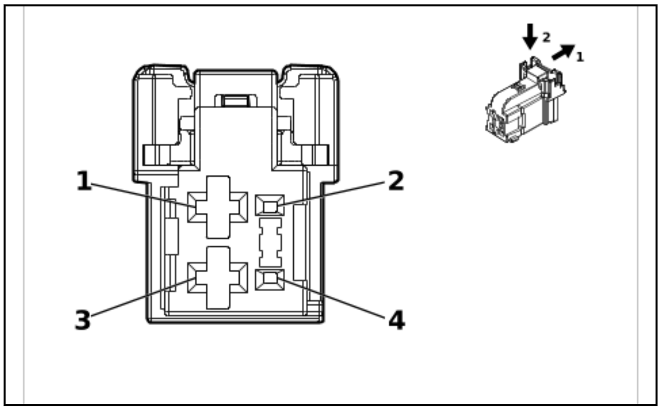
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M65 Steering Column Telescope Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BU / BK | (1) 2098 | (1) Steering Column Telescope Motor Forward Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BN | (2) 2110 | (2) Steering Column Telescope Motor Rearward Control | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) VT / GY | (3) 2153 | (3) Steering Column Telescope Motor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) YE / BK | (4) 2152 | (4) Steering Column Telescope Motor Low Reference | (4) I | (4) — |

### M68 Steering Column Tilt Wheel Actuator



5410027

**Connector Part Information**

- Harness Type: Steering Column Tilt and Telescope Wheel Actuator Motor Harness
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

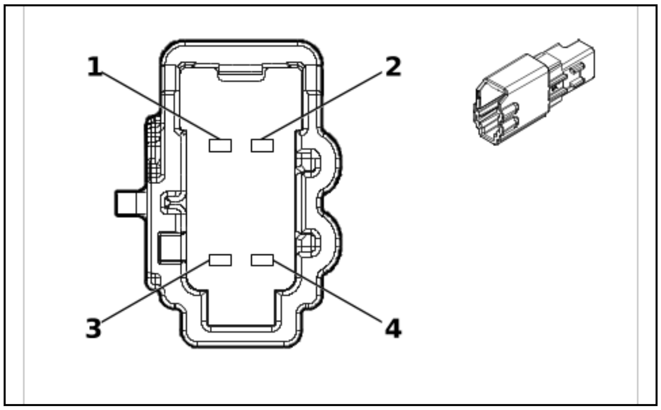
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M68 Steering Column Tilt Wheel Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) GY / VT | (1) 2111 | (1) Steering Column Tilt Motor Up Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / GY | (2) 2112 | (2) Steering Column Tilt Motor Down Control | (2) I | (2) — |
| (3) 3 | (3) 1 | (3) YE | (3) 2154 | (3) Steering Column Tilt Motor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / BK | (4) 2157 | (4) Steering Column Tilt Motor Low Reference | (4) I | (4) — |

## M73A Front Seat Back Ventilation Blower - Driver (KQV)



5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

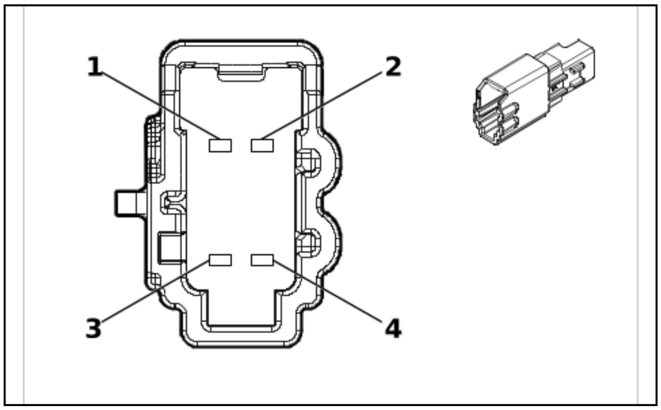
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

### M73A Front Seat Back Ventilation Blower - Driver (KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 5906 | (2) Driver Seat Blower Motor Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1150 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M73B Front Seat Back Ventilation Blower - Passenger (KQV)



5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

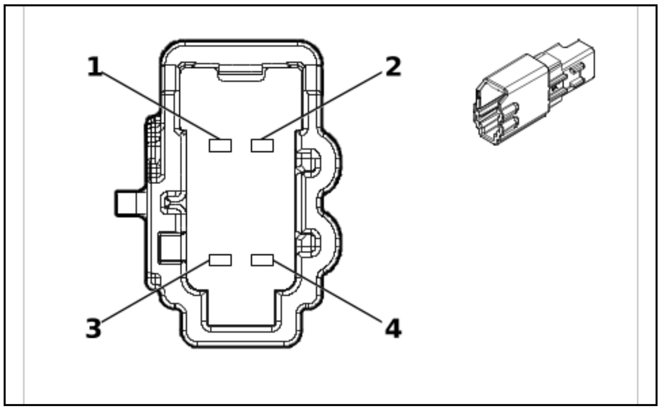
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## M73B Front Seat Back Ventilation Blower - Passenger (KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 5908 | (2) Passenger Seat Blower Motor Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1250 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M73D Front Seat Cushion Ventilation Blower - Driver (KQV)



5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

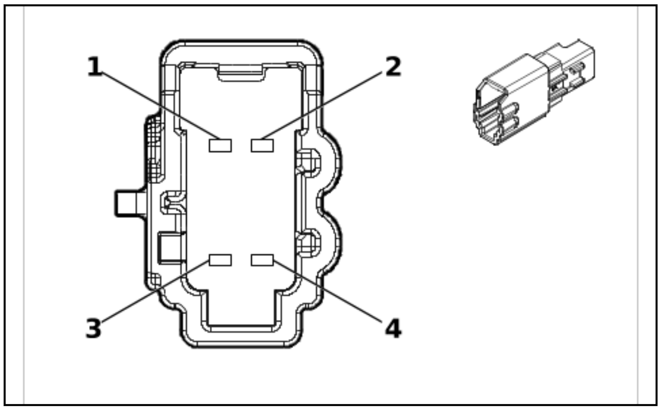
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

### M73D Front Seat Cushion Ventilation Blower - Driver (KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 5906 | (2) Driver Seat Blower Motor Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1150 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M73P Front Seat Cushion Ventilation Blower - Passenger (KQV)



5423974

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 6098-9049
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 MCON Series( GY)

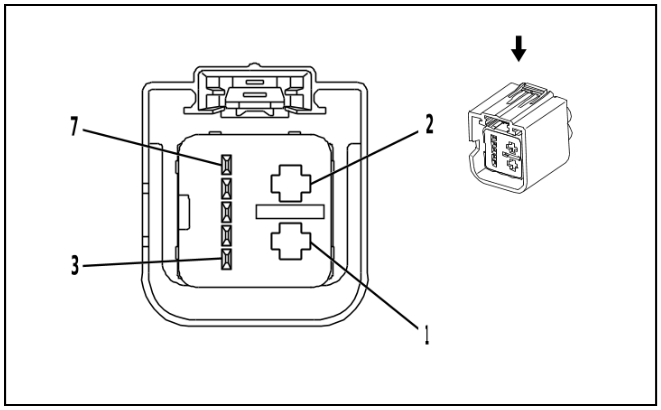
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

### M73P Front Seat Cushion Ventilation Blower - Passenger (KQV)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 1139 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / WH | (2) 5908 | (2) Passenger Seat Blower Motor Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1250 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## M74D Front Side Door Window Regulator Motor - Driver



2282932

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed( GY)

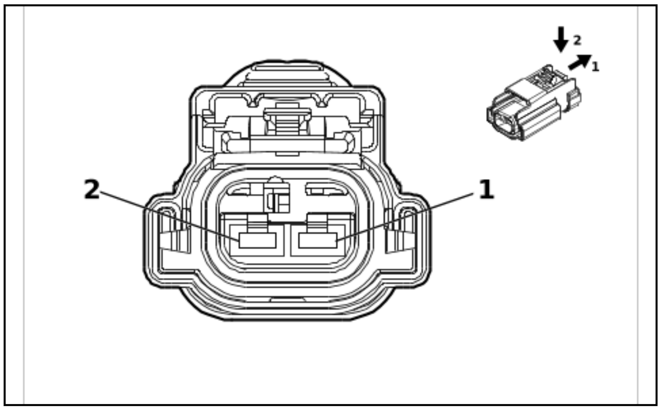
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

### M74D Front Side Door Window Regulator Motor - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1150 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) RD / GY | (2) 3540 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GY / GN | (3) 2763 | (3) Window Switch Left Front Up Signal | (3) II | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / YE | (4) 6134 | (4) Body Control Module LIN Bus 3 | (4) II | (4) — |
| (5) 5 | (5) 0.35 | (5) GN | (5) 2766 | (5) Power Window Switch Left Front Express Signal | (5) II | (5) — |
| (6) 6 | (6) 0.35 | (6) GY | (6) 745 | (6) Left Front Door Ajar Switch Signal | (6) II | (6) — |
| (7) 7 | (7) 0.35 | (7) WH / BN | (7) 2764 | (7) Window Switch Left Front Down Signal | (7) II | (7) — |

### M74LR Rear Side Door Window Regulator Motor - Left



5795169

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

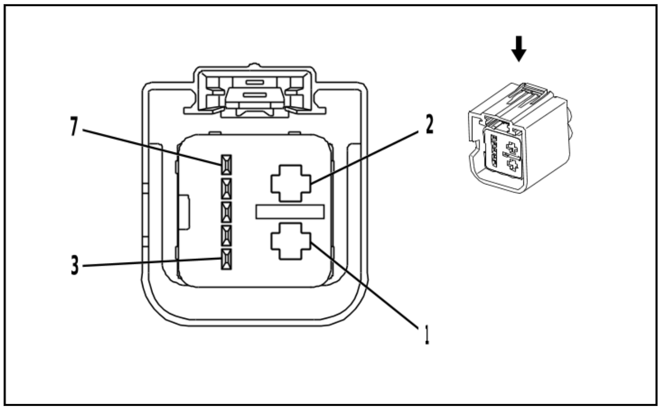
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M74LR Rear Side Door Window Regulator Motor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BU / VT | (1) 668 | (1) Left Rear Window Motor Up Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) YE / BU | (2) 669 | (2) Left Rear Window Motor Down Control | (2) I | (2) — |

### M74P Front Side Door Window Regulator Motor - Passenger



2282932

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 1-1732115-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 7-Way F 0.64, 2.8 Kaizen Timer Series, Sealed( GY)

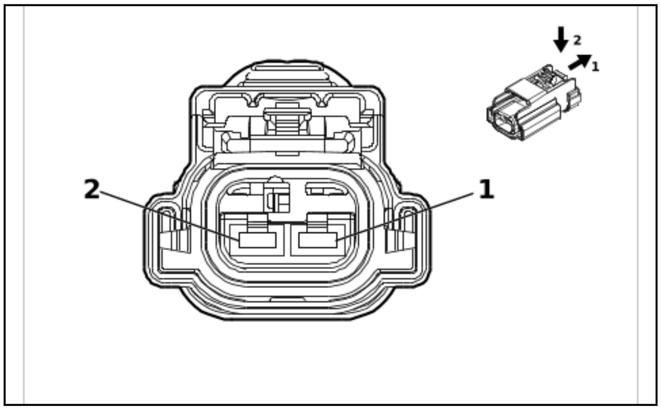
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## M74P Front Side Door Window Regulator Motor - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1250 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) RD / BN | (2) 4240 | (2) Battery Positive Voltage | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN | (3) 1184 | (3) Window Switch Right Front Up Signal | (3) II | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / YE | (4) 6134 | (4) Body Control Module LIN Bus 3 | (4) II | (4) — |
| (5) 5 | (5) 0.35 | (5) VT / GY | (5) 2765 | (5) Window Switch Right Front Express Signal | (5) II | (5) — |
| (6) 6 | (6) 0.35 | (6) GY | (6) 746 | (6) Right Front Door Ajar Switch Signal | (6) II | (6) — |
| (7) 7 | (7) 0.35 | (7) BN | (7) 5295 | (7) Window Switch Right Front Down Signal | (7) II | (7) — |

### M74RR Rear Side Door Window Regulator Motor - Right



5795169

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 35286783
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 APEX Series, Sealed( BK)

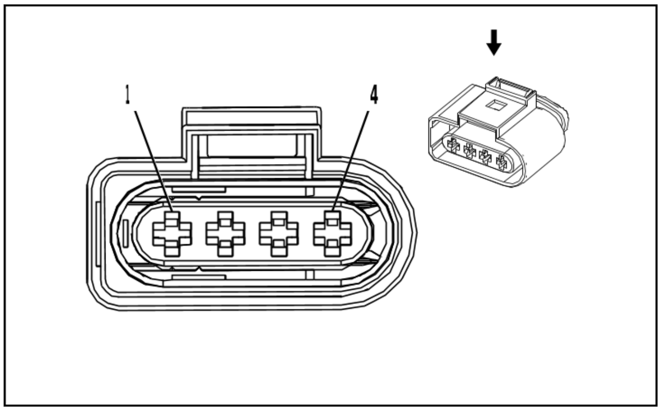
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M74RR Rear Side Door Window Regulator Motor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BU / GY | (1) 670 | (1) Right Rear Window Motor Up Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) GN / BK | (2) 671 | (2) Right Rear Window Motor Down Control | (2) I | (2) — |

### M75 Windshield Wiper Motor



2474722

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 638245-2
- Service Connector: 85596545
- Description: 4-Way F Junior Power Timer Series, Sealed( BK)

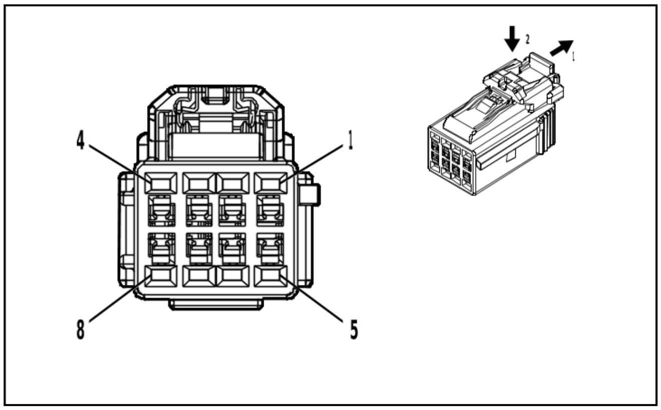
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## M75 Windshield Wiper Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) WH | (1) 92 | (1) Windshield Wiper Motor High Speed Control | (1) I | (1) — |
| (2) 2 | (2) 2 | (2) YE / BN | (2) 95 | (2) Windshield Wiper Motor Low Speed Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / GN | (3) 196 | (3) Windshield Wiper Motor Park Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 2 | (4) BK | (4) 150 | (4) Ground | (4) I | (4) — |

### M81 Sunroof Sunshade Motor



5086387

**Connector Part Information**

- Harness Type: Sunroof Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

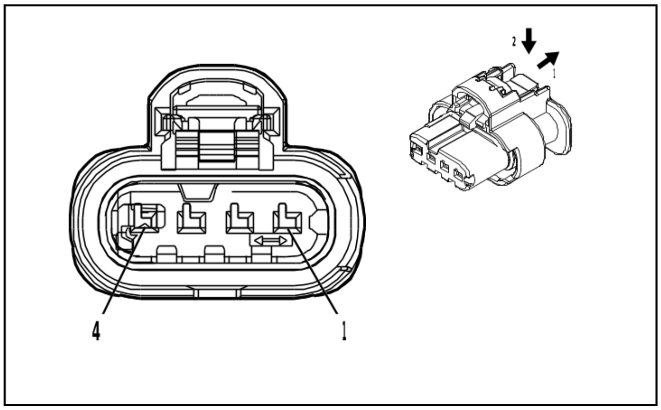
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M81 Sunroof Sunshade Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) PK | (1) 3781 | (1) Front Sunroof Sunshade Motor Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT | (2) 5124 | (2) Sunroof Obstruction Sensor Signal 2 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) RD / WH | (3) 5033 | (3) Sunroof Obstruction Sensor Voltage Reference | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 1.5 | (5) BU | (5) 3782 | (5) Front Sunshade Motor Close Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE | (6) 5034 | (6) Sunroof Obstruction Sensor Signal 1 | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) BK / BN | (7) 128 | (7) Sunroof Switch Low Reference | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |

## M96A Active Grille Air Shutter Actuator 1 (VTI)



4934614

**Connector Part Information**

- Harness Type: Air Shutter Jumper
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way

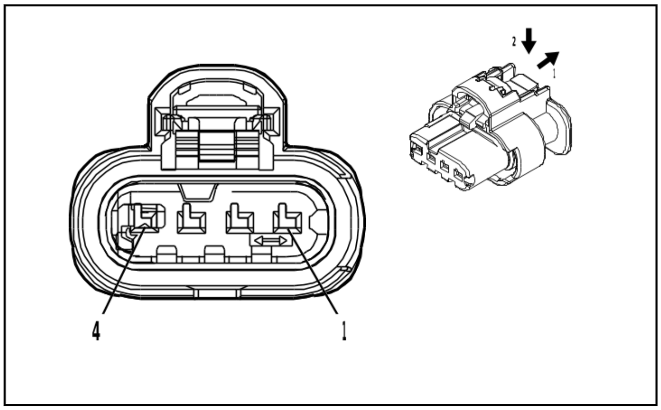
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### M96A Active Grille Air Shutter Actuator 1 (VTI)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5705 | (1) Powertrain Main Relay Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN / VT | (2) 4621 | (2) Engine Control Module LIN Bus 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 6550 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M96B Active Grille Air Shutter Actuator 2 (WMI)



4934614

**Connector Part Information**

- Harness Type: Air Shutter Jumper
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way

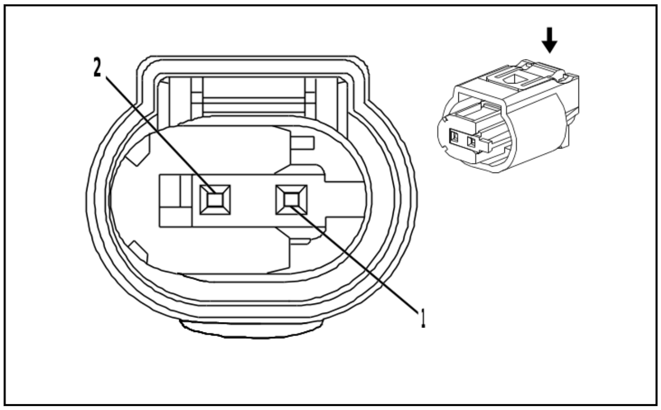
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M96B Active Grille Air Shutter Actuator 2 (WMI)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5705 | (1) Powertrain Main Relay Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN / VT | (2) 4621 | (2) Engine Control Module LIN Bus 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 6550 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 6550 | (4) Ground | (4) I | (4) — |

### M97 Fuel Tank Filler Door Lock Actuator (N08)



1869767

**Connector Part Information**
- Harness Type: Fuel Tank Filler Door Lock Release Wiring Harness
- OEM Connector: 13623700
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Micro-Quadlock Series, Sealed( BK)

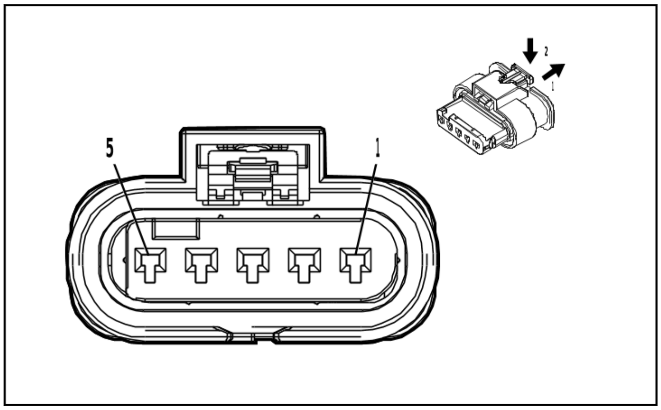
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## M97 Fuel Tank Filler Door Lock Actuator (N08)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / BK | (1) 2690 | (1) Fuel Door Actuator Unlock Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / GY | (2) 2683 | (2) Unlatch Actuators Unlatch Low Reference 1 | (2) I | (2) — |

### M103 Turbocharger Vane Position Actuator (LZ0)



3338689

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-1718806-1
- Service Connector: 19119351
- Description: 5-Way F 1.2 MCON-LL Series, Sealed( BK)

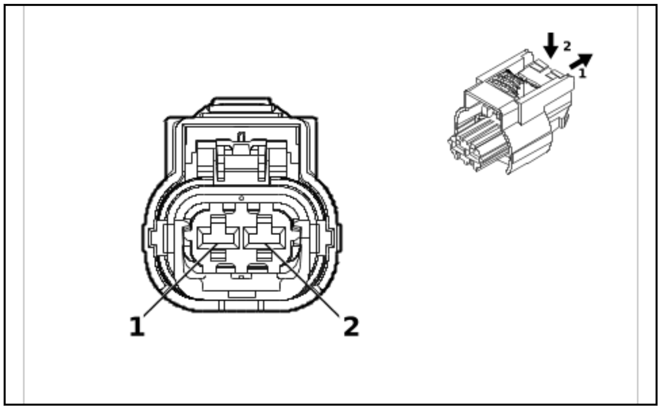
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## M103 Turbocharger Vane Position Actuator (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) WH / BN | (1) 1313 | (1) Variable Geometry Turbocharger Position Sensor Motor Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / YE | (2) 5947 | (2) Turbocharger Vane Position Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / GN | (3) 580 | (3) Engine Control Sensors Low Reference 2 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / RD | (4) 480 | (4) Engine Control Vehicle Sensors 5 Volt Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) GY / BK | (5) 1330 | (5) Variable Geometry Turbocharger Position Sensor Motor Close Control | (5) I | (5) — |

### M104L Parking Brake Actuator - Left



4992524

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness - Left
- OEM Connector: 35182447
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

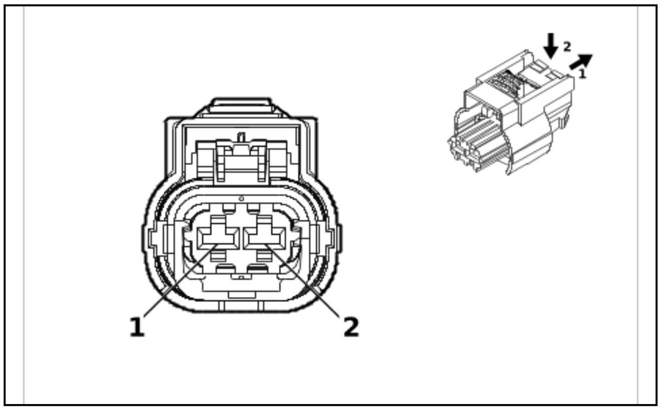
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M104L Parking Brake Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) WH | (1) 2001 | (1) Left Park Brake Motor Apply Control | (1) I | (1) Z95+ ZW7+ Z56 |
| (2) 2 | (2) 2.5 | (2) GY / BK | (2) 4369 | (2) Left Park Brake Motor Low Reference | (2) I | (2) — |

### M104R Parking Brake Actuator - Right



4992524

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness - Right
- OEM Connector: 35182447
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

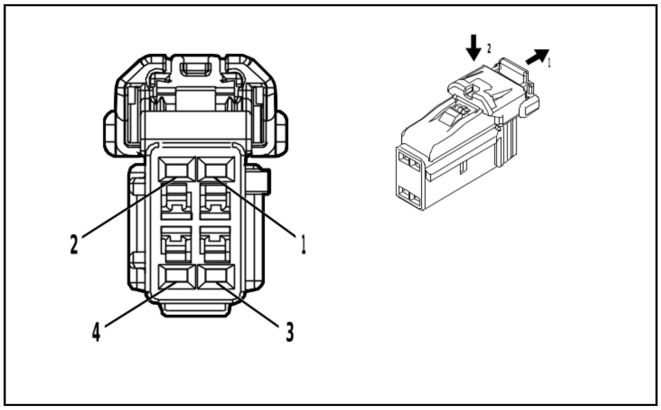
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## M104R Parking Brake Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GN / VT | (1) 1988 | (1) Right Park Brake Motor Apply Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) GY | (2) 4368 | (2) Right Park Brake Motor Low Reference | (2) I | (2) — |

### M107LR Folding Rear Seat Back Actuator - Left (ATN / ATT)



4872683

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Left Cushion
- OEM Connector: 13533335
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

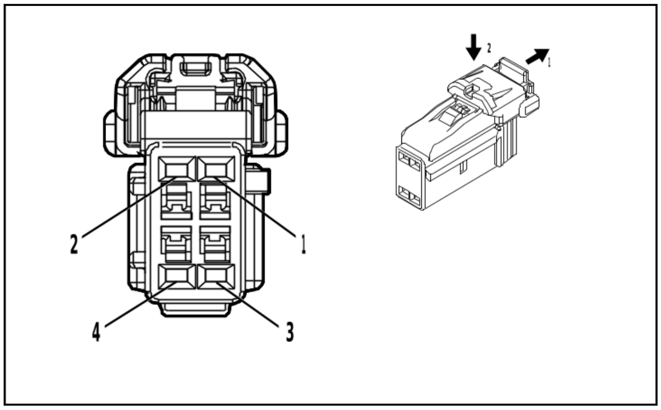
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M107LR Folding Rear Seat Back Actuator - Left (ATN / ATT)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) RD / GY | (1) 6240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) — | (3) GN | (3) 6808 | (3) Left Rear Folding Seat Motor Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M107RR Folding Rear Seat Back Actuator - Right (ATN / ATT)



4872683

**Connector Part Information**

- Harness Type: 2nd Row Seat Wiring Harness - Right Cushion
- OEM Connector: 13533335
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

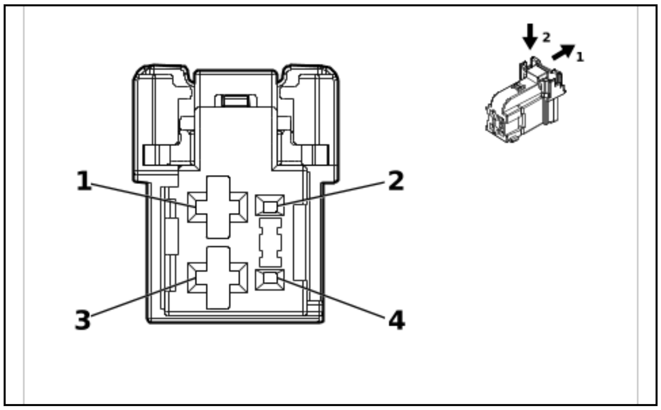
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M107RR Folding Rear Seat Back Actuator - Right (ATN / ATT)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) RD / GY | (1) 6240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) — | (2) BK | (2) 1450 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) — | (3) BN / WH | (3) 6809 | (3) Right Rear Folding Seat Motor Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### M108LR 3rd Row Seat Back Pivot Actuator Motor - Left



5410027

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

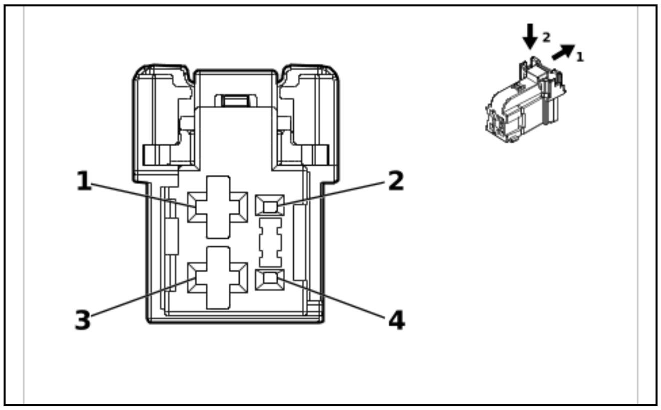
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## M108LR 3rd Row Seat Back Pivot Actuator Motor - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BN | (1) 4222 | (1) 3rd Row Left Seat Recline Motor Rearward Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BN | (2) 4214 | (2) 3rd Row Left Seat Recline Position Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 1.5 | (3) VT / BK | (3) 4221 | (3) 3rd Row Left Seat Recline Motor Forward Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 5474 | (4) 3rd Row Seat Sensor Low Reference | (4) II | (4) — |

### M108RR 3rd Row Seat Back Pivot Actuator Motor - Right



5410027

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 2316171-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64, 2.8 Series( BK)

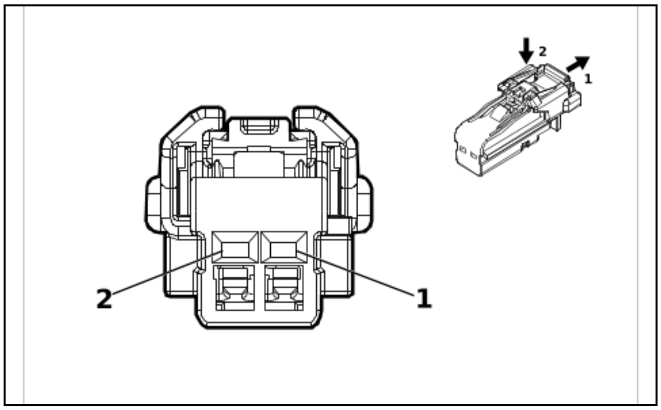
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |

## M108RR 3rd Row Seat Back Pivot Actuator Motor - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GY / OG | (1) 4218 | (1) 3rd Row Right Seat Recline Rearward Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / VT | (2) 4213 | (2) 3rd Row Right Seat Recline Position Sensor Signal | (2) II | (2) — |
| (3) 3 | (3) 1.5 | (3) BU | (3) 4217 | (3) 3rd Row Right Seat Recline Motor Forward Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 5474 | (4) 3rd Row Seat Sensor Low Reference | (4) II | (4) — |

### M109LR Folding 3rd Row Seat Back Actuator - Left



4115691

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

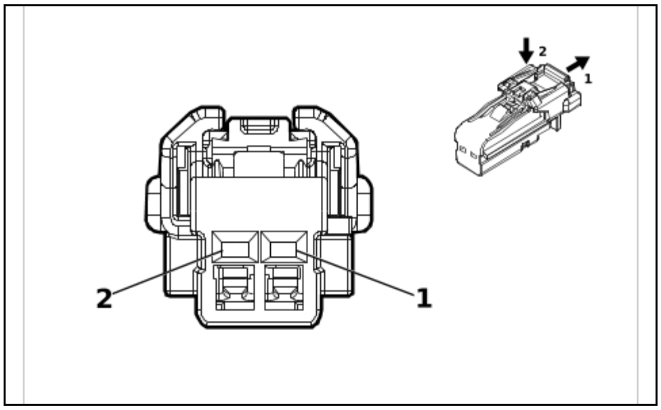
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M109LR Folding 3rd Row Seat Back Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BK | (1) 8923 | (1) Left 3rd Row Folding Seat Back Unlatch Motor Control High | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / WH | (2) 8922 | (2) Left 3rd Row Folding Seat Back Unlatch Motor Control Low | (2) I | (2) — |

### M109RR Folding 3rd Row Seat Back Actuator - Right



4115691

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

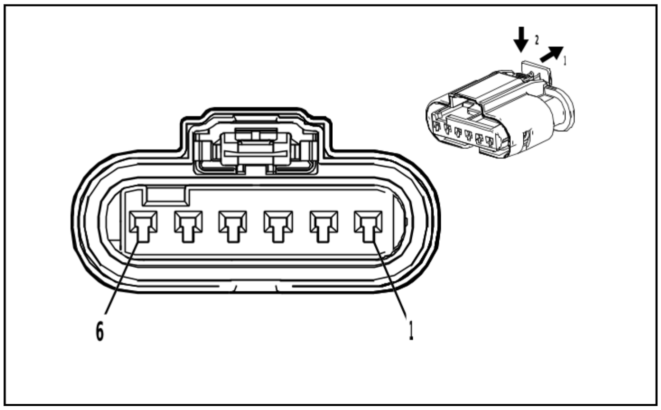
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## M109RR Folding 3rd Row Seat Back Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / BN | (1) 8921 | (1) Right 3rd Row Folding Seat Back Unlatch Motor Control High | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / VT | (2) 8920 | (2) Right 3rd Row Folding Seat Back Unlatch Motor Control Low | (2) I | (2) — |

### M122 Exhaust Pressure Regulator Valve (LZ0)



3960142

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34900-6119
- Service Connector: 85005020
- Description: 6-Way F 1.2 MCON-LL Series, Sealed( BK)

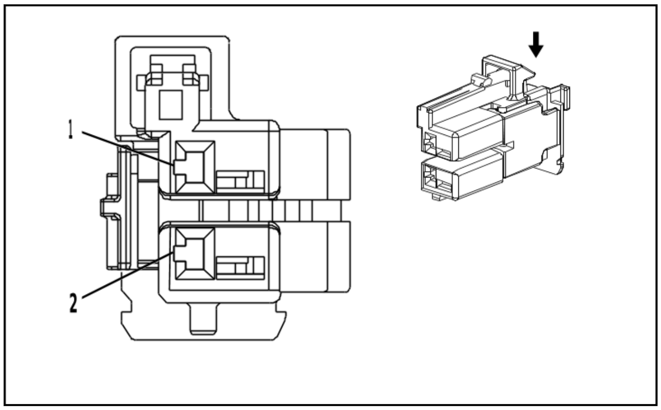
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## M122 Exhaust Pressure Regulator Valve (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BN | (1) 1420 | (1) Exhaust Restrictor Motor Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN | (2) 1421 | (2) Exhaust Restrictor Motor Closed Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 548 | (3) Engine Control Sensors Low Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / GN | (4) 4305 | (4) Exhaust Flow Control Valve 1 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / RD | (5) 460 | (5) Engine Control Sensors 5 Volt Reference 1 | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### M123 Transmission Park Valve Lock Solenoid Actuator



4364736

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540049
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BU)

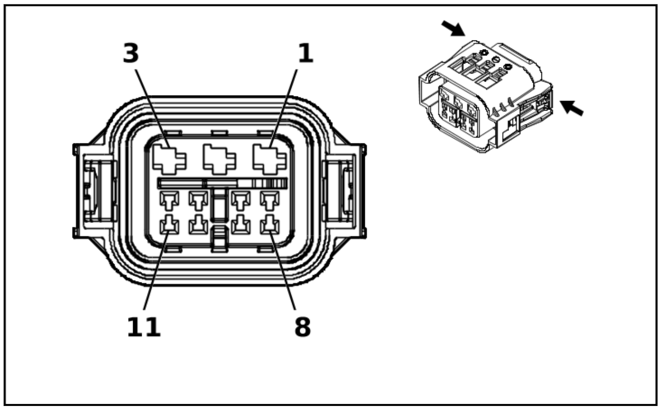
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## M123 Transmission Park Valve Lock Solenoid Actuator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BN | (1) 6387 | (1) Transmission High Side Driver 1 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) OG | (2) 2159 | (2) Park Inhibit Solenoid Assembly Control | (2) I | (2) — |

### M135 Differential Lock Motor



5202126

**Connector Part Information**
- Harness Type: Differential Carrier Lock Wiring Harness
- OEM Connector: 10090636
- Service Connector: Service by Harness - See Part Catalog
- Description: 11-Way F 1.2 Multilock, 2.8 SLK Series, Sealed( BK)

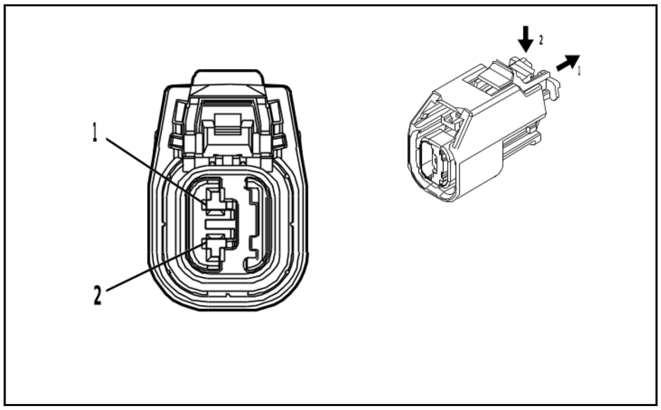
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## M135 Differential Lock Motor

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 2.5 | (2) YE / WH | (2) 7969 | (2) Axle Differential Lock Control Low | (2) II | (2) — |
| (3) 3 | (3) 2.5 | (3) GY / BN | (3) 7968 | (3) Axle Differential Lock Control High | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / RD | (4) 7973 | (4) Axle Differential Lock Motor Position Sensor High Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / WH | (5) 7978 | (5) Axle Differential Lock Motor Temperature Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / BN | (6) 7975 | (6) Axle Differential Lock Motor Position Sensor Signal 1 | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) WH | (7) 7971 | (7) Axle Differential Lock Motor Brake Control High | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BK / YE | (8) 7977 | (8) Axle Differential Lock Motor Temperature Sensor Low Reference | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) BK / VT | (9) 7974 | (9) Axle Differential Lock Motor Position Sensor Low Reference | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GY | (10) 7976 | (10) Axle Differential Lock Motor Position Sensor Signal 2 | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) VT / BK | (11) 7972 | (11) Axle Differential Lock Motor Brake Control Low | (11) I | (11) — |

### P13 Horn



4889830

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33164011
- Service Connector: 86802964
- Description: 2-Way F 1.5 OCS Series, Sealed( BK)

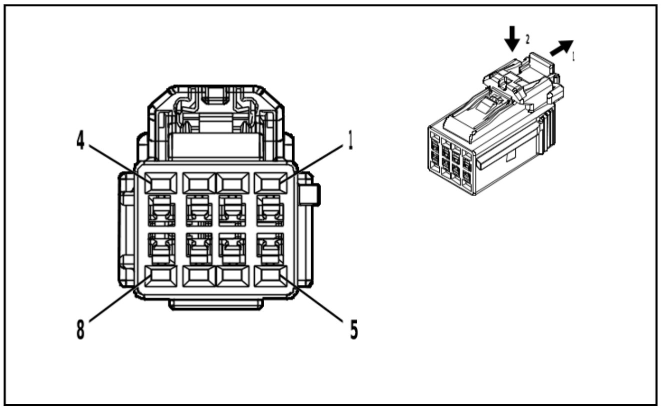
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P13 Horn

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 250 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / GY | (2) 29 | (2) Horn Control | (2) I | (2) — |

### P16 Instrument Panel Cluster Control Module X1



5086387

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series( BK)

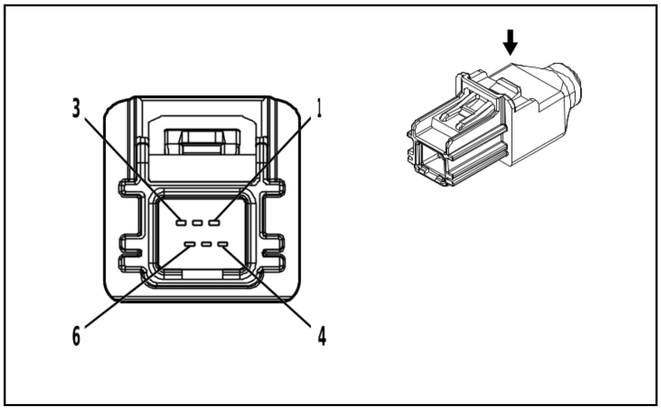
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P16 Instrument Panel Cluster Control Module X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / WH | (1) 1340 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) BK / WH | (8) 1451 | (8) Signal Ground | (8) I | (8) — |

### P16 Instrument Panel Cluster Control Module X2



4806625

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1023
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series( BK)

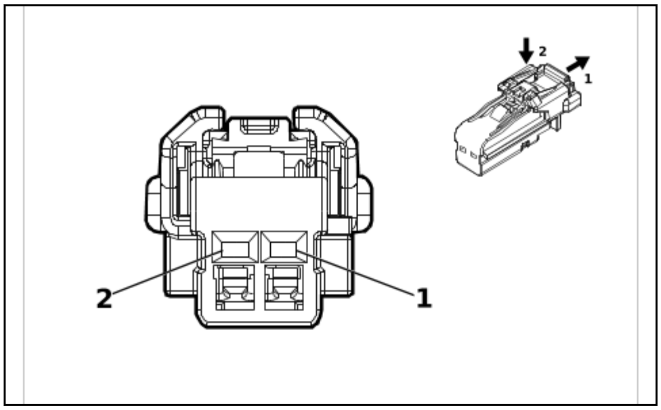
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## P16 Instrument Panel Cluster Control Module X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| BK | 0 | — | LVDS | Low Voltage Differential Signaling Cable | I | — |

### P18 Door Lock Status Indicator



4115691

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

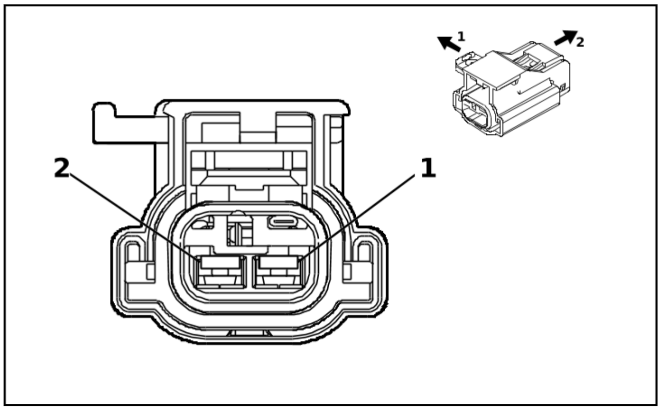
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P18 Door Lock Status Indicator

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY | (1) 728 | (1) Security Indicator Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1150 | (2) Ground | (2) I | (2) — |

### P19AFC Front Floor Speaker - Console (UQS)



5219859

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33512070
- Service Connector: 84867145
- Description: 2-Way F 2.8 APEX Series( BK)

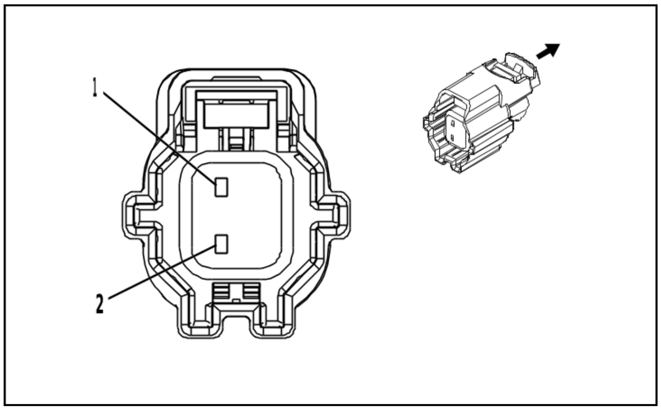
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## P19AFC Front Floor Speaker - Console (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GN / BK | (1) 1794 | (1) Left/Rear Subwoofer [-] Control | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) BU / GY | (2) 346 | (2) Left/Rear Subwoofer [+] Control | (2) I | (2) — |

### P19AG Radio Front Side Door Speaker - Left



4223204

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

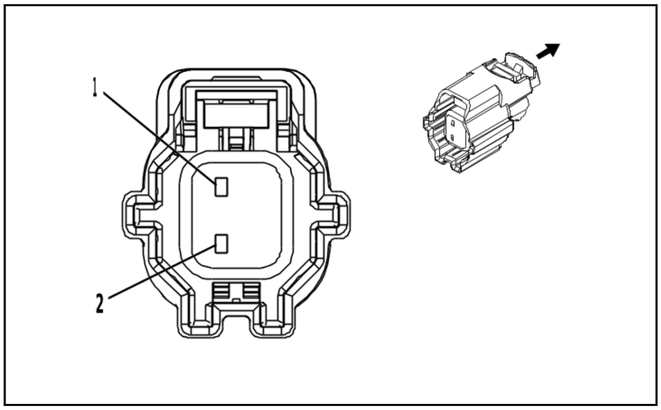
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AG Radio Front Side Door Speaker - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BU | (1) 118 | (1) Left Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |

### P19AH Radio Front Side Door Speaker - Right



4223204

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

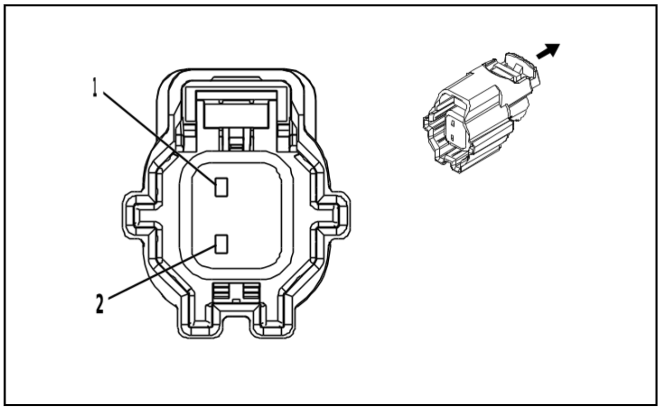
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AH Radio Front Side Door Speaker - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / BK | (1) 117 | (1) Right Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |

### P19AL Radio Rear Side Door Speaker - Left



4223204

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

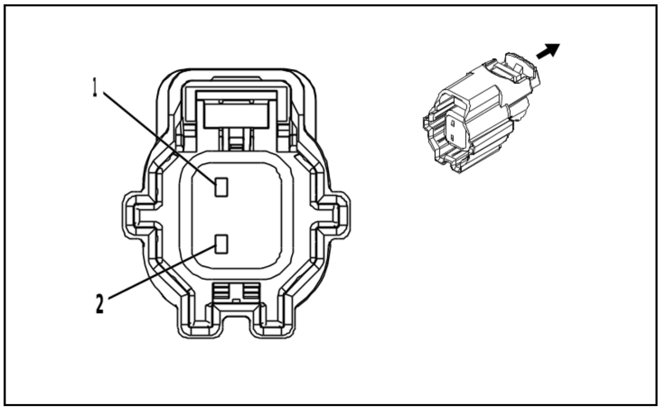
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AL Radio Rear Side Door Speaker - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / BK | (1) 116 | (1) Left Rear Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN | (2) 199 | (2) Left Rear Speaker [+] Control | (2) I | (2) — |

### P19AM Radio Rear Side Door Speaker - Right



4223204

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 34062-0044
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 MX Series, Sealed( BK)

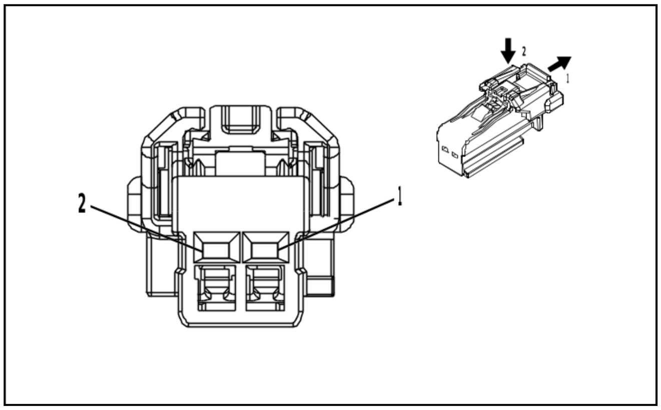
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## P19AM Radio Rear Side Door Speaker - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / BK | (1) 115 | (1) Right Rear Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH | (2) 46 | (2) Right Rear Speaker [+] Control | (2) I | (2) — |

### P19B Radio Front Center Speaker



4373379

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

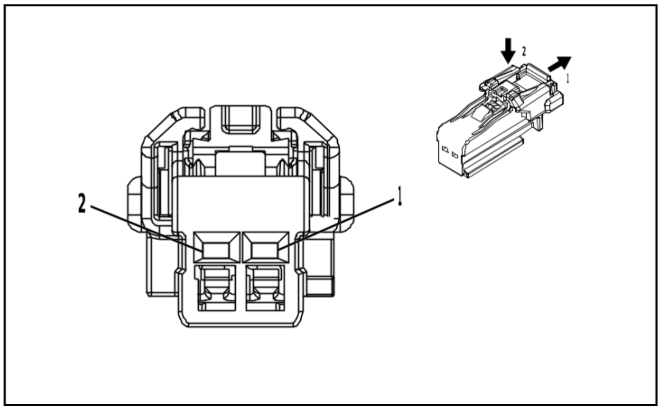
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19B Radio Front Center Speaker

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / YE | (1) 1960 | (1) Front Center Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE / WH | (2) 1860 | (2) Front Center Speaker [+] Control | (2) I | (2) — |

### P19H Radio Windshield Side Garnish Molding Speaker - Left Front



4373379

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

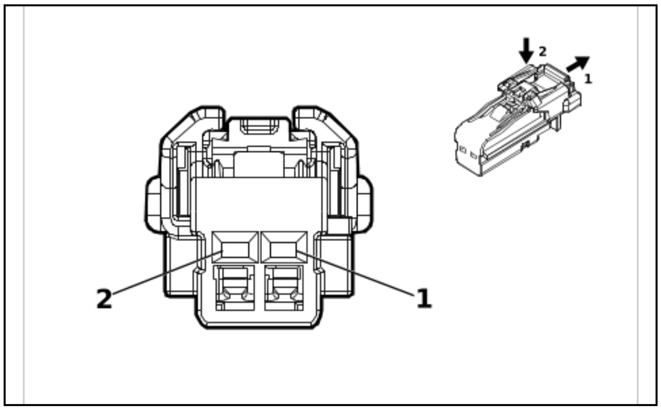
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19H Radio Windshield Side Garnish Molding Speaker - Left Front

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / BN | (1) 1957 | (1) Left Front Midrange Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / VT | (2) 1857 | (2) Left Front Midrange Speaker [+] Control | (2) I | (2) — |

### P19J Radio Front Speaker - Instrument Panel Left (UQF)



4115691

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

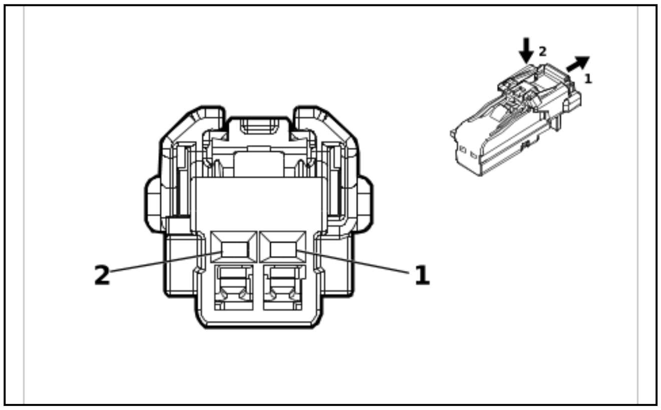
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19J Radio Front Speaker - Instrument Panel Left (UQF)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 118 | (1) Left Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |

### P19J Radio Front Speaker - Instrument Panel Left (UQS)



5377746

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8990
- Service Connector: 84867147
- Description: 2-Way F 1.2 MCON Series( BN)

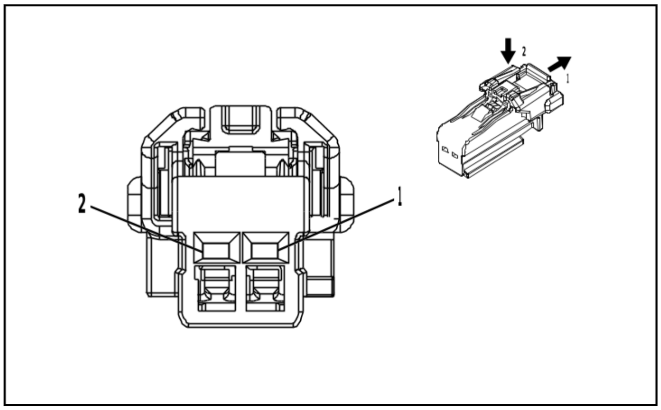
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19J Radio Front Speaker - Instrument Panel Left (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 118 | (1) Left Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 201 | (2) Left Front Speaker 1 [+] Control | (2) I | (2) — |

### P19M Radio Body Rear Corner Upper Garnish Molding Speaker - Left (UQS)



4373379

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

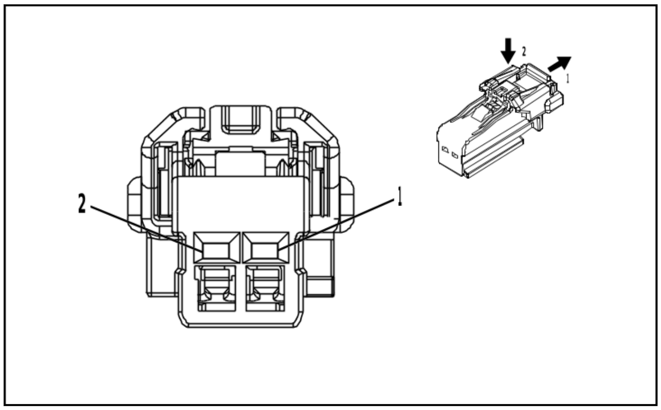
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19M Radio Body Rear Corner Upper Garnish Molding Speaker - Left (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / WH | (1) 8575 | (1) Left Rear D-Pillar Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / GN | (2) 8576 | (2) Left Rear D-Pillar Speaker [+] Control | (2) I | (2) — |

### P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS)



4373379

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

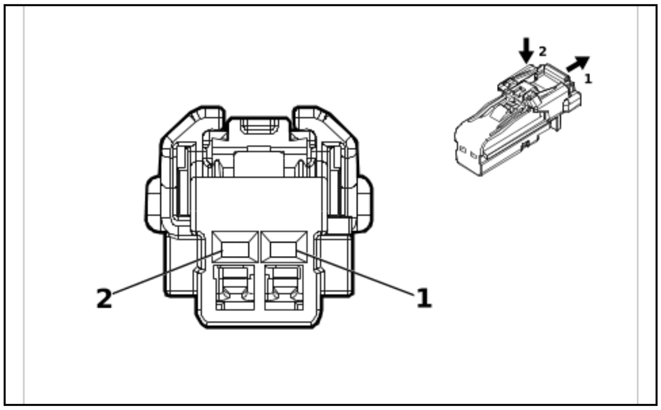
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / BK | (1) 1953 | (1) Right Front Midrange Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH / YE | (2) 1853 | (2) Right Front Midrange Speaker [+] Control | (2) I | (2) — |

### P19W Radio Front Speaker - Instrument Panel Right (UQF)



4115691

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

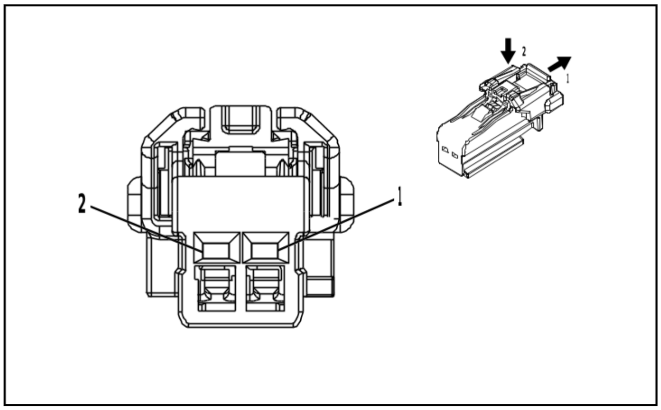
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19W Radio Front Speaker - Instrument Panel Right (UQF)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BK | (1) 117 | (1) Right Front Speaker [-] Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |

## P19Z Radio Body Rear Corner Upper Garnish Molding Speaker - Right



4373379

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8989
- Service Connector: 19369632
- Description: 2-Way F 1.2 MCON Series( GY)

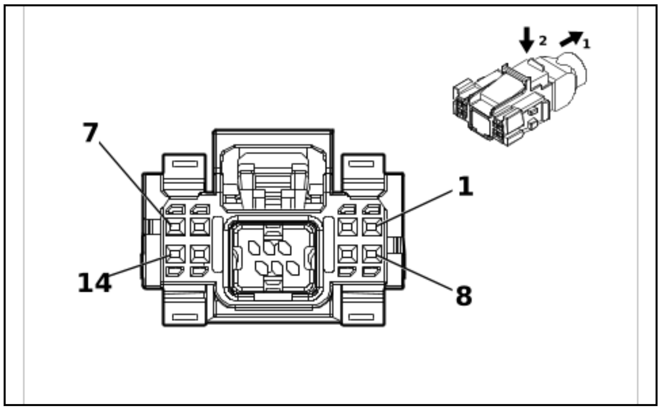
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## P19Z Radio Body Rear Corner Upper Garnish Molding Speaker - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / WH | (1) 8577 | (1) Right Rear D-Pillar Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT | (2) 8578 | (2) Right Rear D-Pillar Speaker [+] Control | (2) I | (2) — |

## P22E Video Display - Left Front Seat Back (UW9)



5500325

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 13532130
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 0.5 MQS, High Speed Autolink Series( GY)

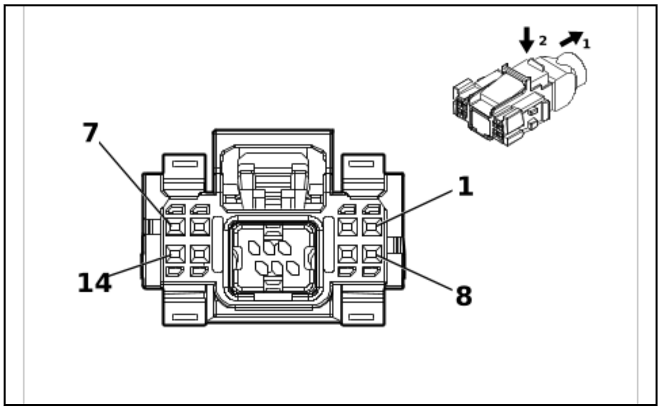
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## P22E Video Display - Left Front Seat Back (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / BN | (1) 3640 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) BK / WH | (9) 1451 | (9) Signal Ground | (9) I | (9) — |
| 10 - 14 | — | — | — | Not Occupied | — | — |
| GY | 0.13 | — | LVDS | Low Voltage Differential Signaling Cable | I | — |

## P22F Video Display - Right Front Seat Back (UW9)



5500325

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 13532130
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 0.5 MQS, High Speed Autolink Series( GY)

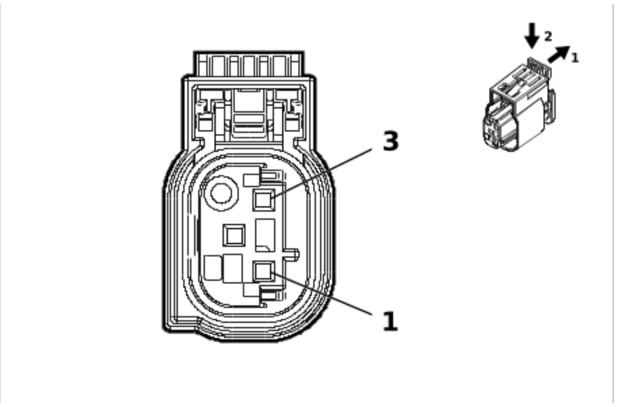
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

### P22F Video Display - Right Front Seat Back (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / BN | (1) 3640 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 - 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 0.35 | (9) BK / WH | (9) 1451 | (9) Signal Ground | (9) I | (9) — |
| 10 - 14 | — | — | — | Not Occupied | — | — |
| GY | 0.13 | — | LVDS | Low Voltage Differential Signaling Cable | II | — |

## P25 Content Theft Deterrent Alarm (UTR)



2534360

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 13623745
- Service Connector: 84999471
- Description: 3-Way F 0.64 Micro-Quadlock Series, Sealed( BK)

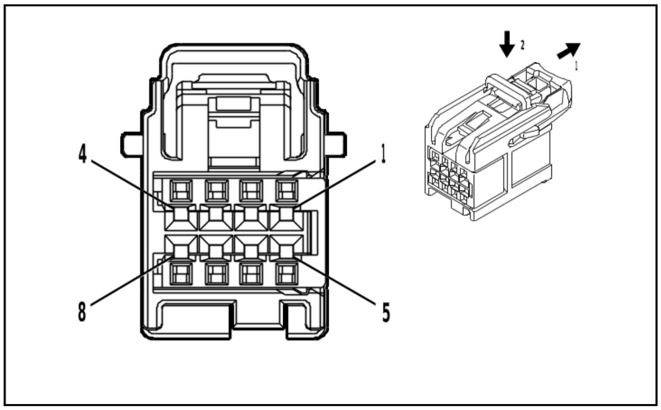
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### P25 Content Theft Deterrent Alarm (UTR)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 150 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BU | (2) 6133 | (2) Body Control Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) RD / YE | (3) 13140 | (3) Battery Positive Voltage | (3) I | (3) — |

## P29 Head-Up Display X1 (UV6)



4935776

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526972
- Service Connector: 19370429
- Description: 8-Way F 0.64 OCS Series( BK)

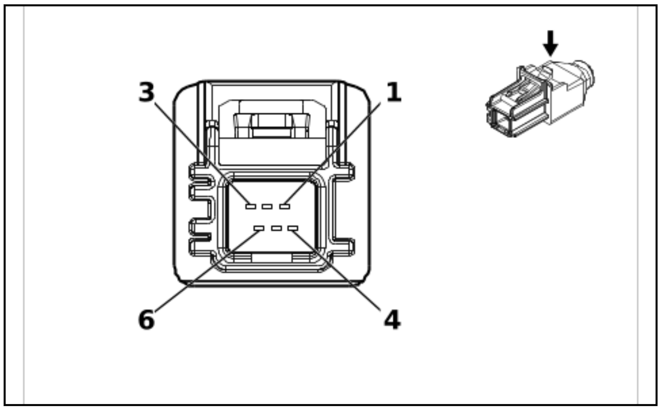
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### P29 Head-Up Display X1 (UV6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 1451 | (4) Signal Ground | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) RD / WH | (6) 1340 | (6) Battery Positive Voltage | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |

### P29 Head-Up Display X2 (UV6)



6175927

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 100337-1323
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series( GN)

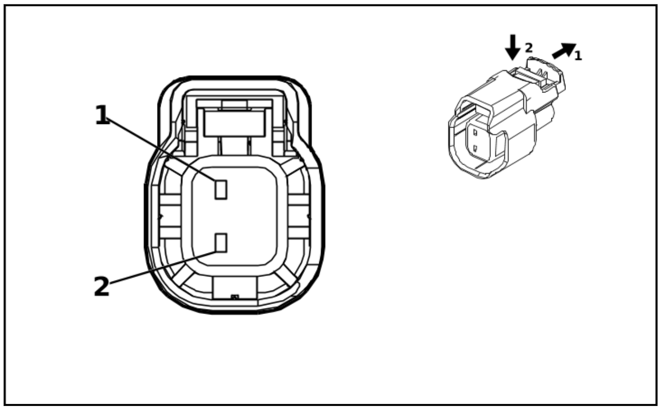
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## P29 Head-Up Display X2 (UV6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| GN | 0 | — | LVDS | Low Voltage Differential Signaling Cable | I | — |

### P37LG Rear Closure Hands Free Alarm (TCP)



3028817

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 34062-0030
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( GY)

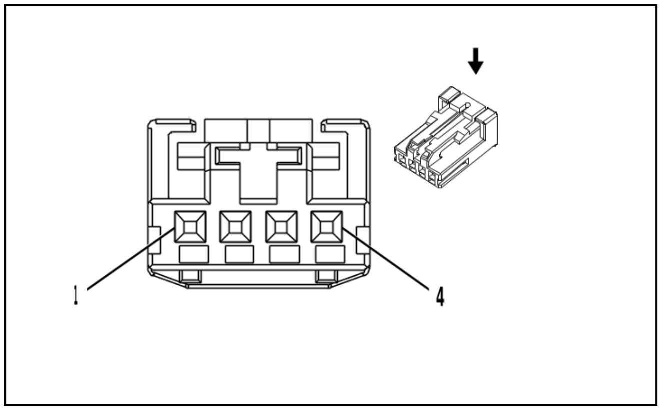
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## P37LG Rear Closure Hands Free Alarm (TCP)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 2050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / VT | (2) 12481 | (2) Hands Free Closure Release Sensor Alarm Control | (2) I | (2) — |

### P43 Forward Collision Alert Display (UEU - UV6)



2717162

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

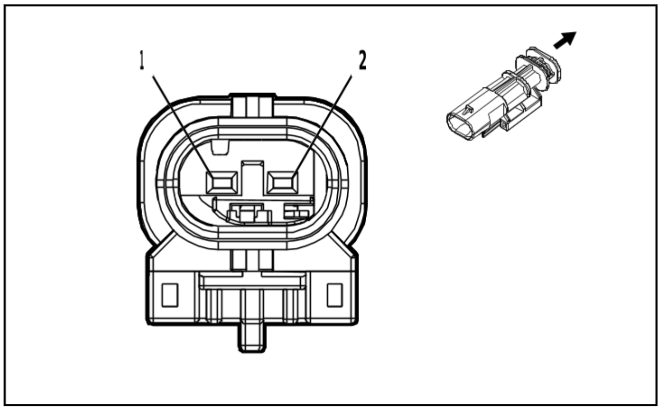
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## P43 Forward Collision Alert Display (UEU - UV6)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / WH | (1) 639 | (1) Run/Crank Ignition 1 Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / YE | (2) 3885 | (2) Forward Collision Alert LED Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GY / BK | (3) 4787 | (3) Day Night LED Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 1851 | (4) Signal Ground | (4) I | (4) — |

### P45L Front Seat Lane Departure Warning Actuator - Left



4569729

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34899-2080
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

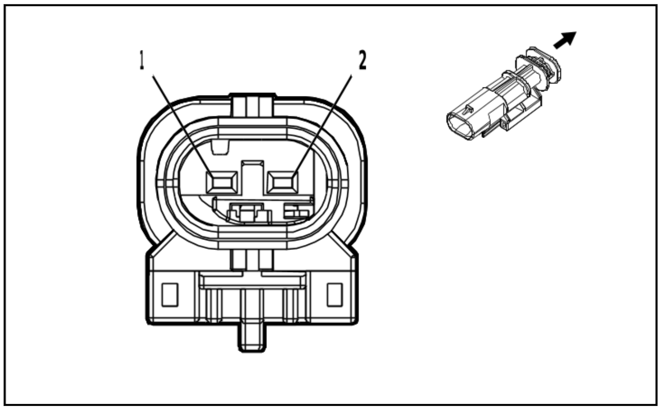
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## P45L Front Seat Lane Departure Warning Actuator - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1150 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BN | (2) 3037 | (2) Driver Seat Left Rear Haptic Movement Motor Control | (2) I | (2) — |

### P45R Front Seat Lane Departure Warning Actuator - Right



4569729

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 34899-2080
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

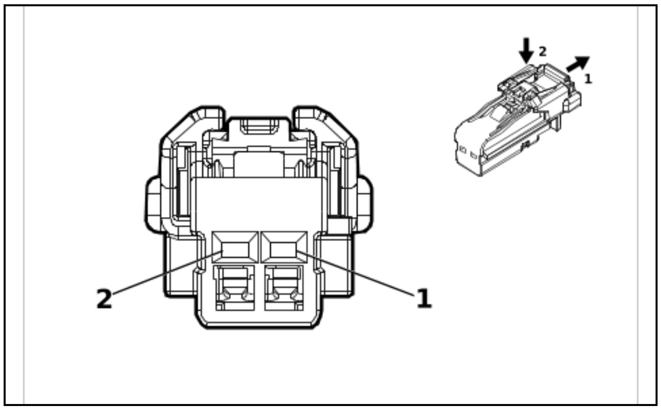
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-13 (BU) | No Tool Required |

## P45R Front Seat Lane Departure Warning Actuator - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1150 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN | (2) 3038 | (2) Driver Seat Right Rear Haptic Movement Motor Control | (2) I | (2) — |

### P50 Regulatory Emergency Call Backup Speaker (UER)



4115691

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

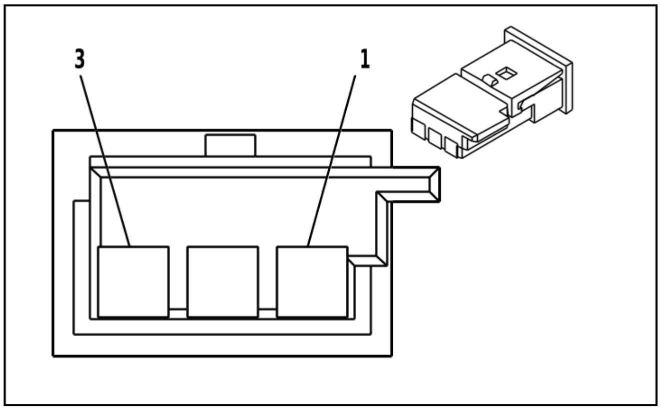
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## P50 Regulatory Emergency Call Backup Speaker (UER)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BK | (1) 4769 | (1) Emergency Call Backup Speaker [-] Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / GN | (2) 4770 | (2) Emergency Call Backup Speaker [+] Control | (2) I | (2) — |

## P51 Steering Wheel LED Display (UKL)



647970

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 1-1718346-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 0.64 Micro-Quadlock Series( BK)

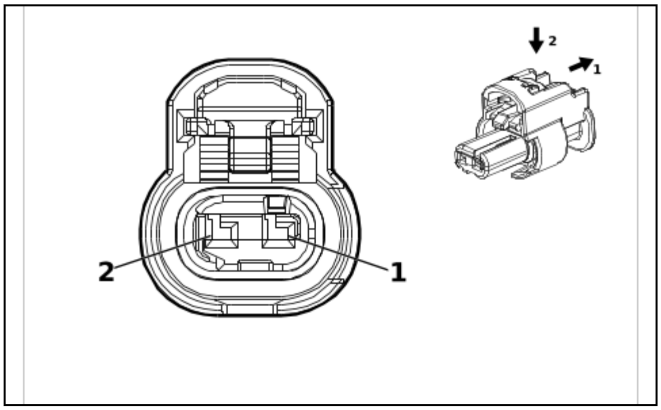
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### P51 Steering Wheel LED Display (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BN | (1) 7744 | (1) Driver Illumination Lamp Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BU | (2) 2245 | (2) Driver Illumination Lamp 2 Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH / VT | (3) 2246 | (3) Driver Illumination Lamp 1 Control | (3) I | (3) — |

### Q2 Air Conditioning Clutch



4649903

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

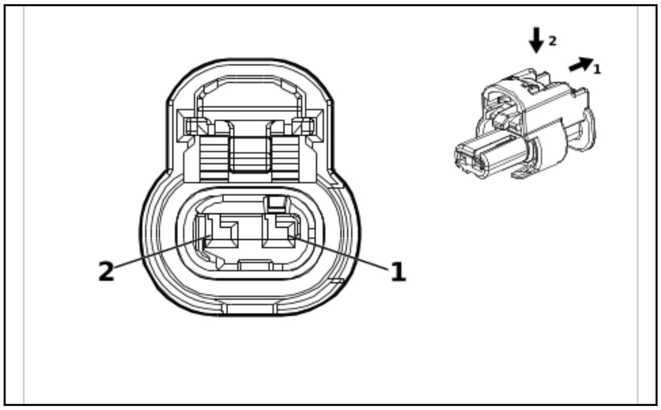
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q2 Air Conditioning Clutch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 6550 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / GN | (2) 59 | (2) Air Conditioning Compressor Clutch Control | (2) I | (2) — |

### Q4 Automatic Level Control Solenoid Valve (F47)



4649903

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: 85761014
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

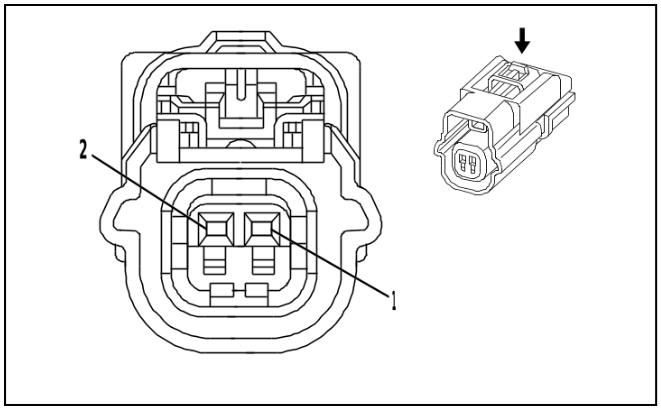
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q4 Automatic Level Control Solenoid Valve (F47)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 3261 | (1) Vehicle Level Control Exhaust Solenoid Valve Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GN | (2) 320 | (2) Vehicle Level Control Exhaust Solenoid Valve Control | (2) I | (2) — |

### Q6F Camshaft Position Actuator Solenoid Valve - Intake



1664592

**Connector Part Information**
- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 54390239
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 0.64 Kaizen Series, Sealed( BK)

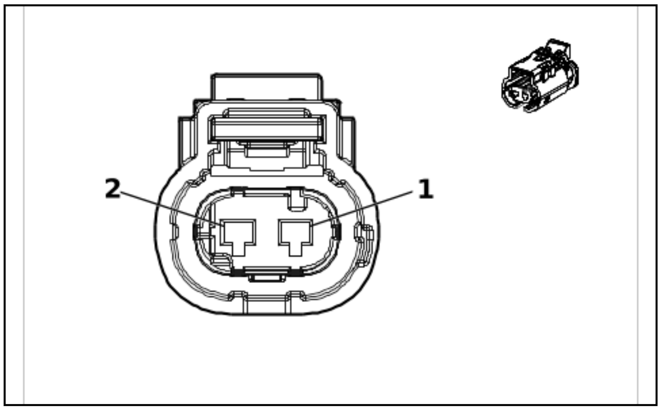
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## Q6F Camshaft Position Actuator Solenoid Valve - Intake

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / BN | (1) 6753 | (1) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / BN | (2) 5284 | (2) Intake Camshaft Position Actuator Solenoid Valve 1 | (2) I | (2) — |

### Q12 Evaporative Emission Canister Purge Solenoid Valve



6776339

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10530497
- Service Connector: 86308598
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

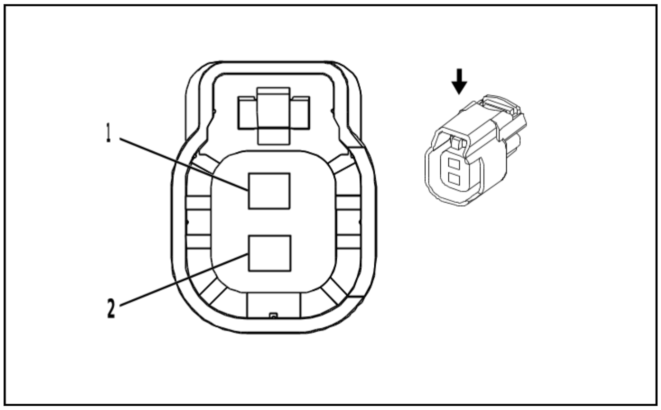
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q12 Evaporative Emission Canister Purge Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / BU | (1) 5293 | (1) Powertrain Main Relay Fused Supply Voltage 4 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GN / BU | (2) 428 | (2) EVAP Canister Purge Solenoid Control | (2) I | (2) — |

### Q13 Evaporative Emission Canister Vent Solenoid Valve (L84 / L87)



2422378

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34062-0028
- Service Connector: 13579002
- Description: 2-Way F 1.5 Series, Sealed( BK)

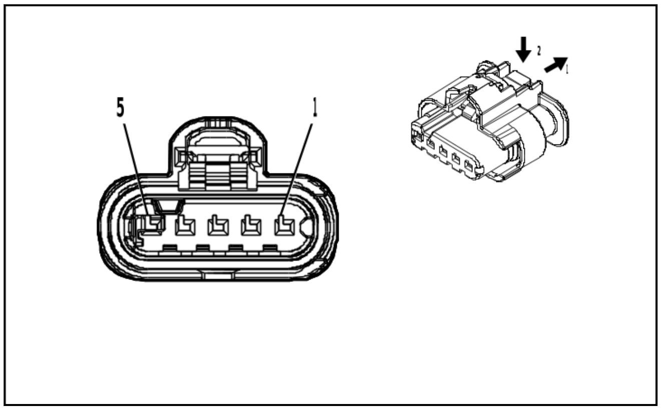
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## Q13 Evaporative Emission Canister Vent Solenoid Valve (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 1310 | (1) EVAP Vent Solenoid Valve Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / WH | (2) 2040 | (2) Battery Positive Voltage | (2) I | (2) — |

### Q14A Exhaust Gas Recirculation Valve 1 (LZ0)



4997783

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296697-1
- Service Connector: 19371195
- Description: 5-Way F 1.2 MCON-CB Series, Sealed( BK)

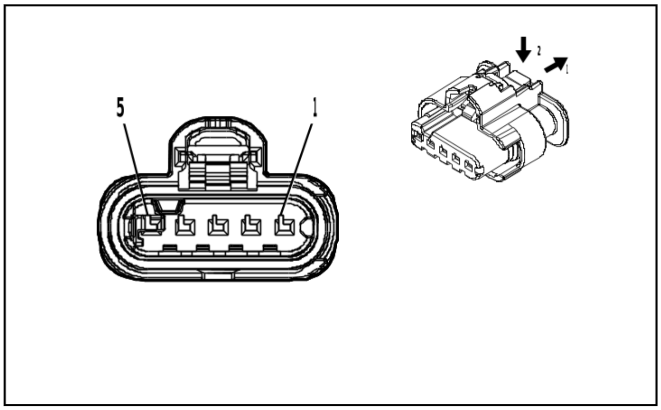
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q14A Exhaust Gas Recirculation Valve 1 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / RD | (1) 460 | (1) Engine Control Sensors 5 Volt Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 5763 | (2) Exhaust Gas Recirculation Position Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / YE | (3) 548 | (3) Engine Control Sensors Low Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) WH / VT | (4) 5764 | (4) Exhaust Gas Recirculation Valve High Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) VT / BK | (5) 5746 | (5) Exhaust Gas Recirculation Valve Low Control | (5) I | (5) — |

## Q14B Exhaust Gas Recirculation Valve 2 (LZ0)



4997783

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296697-1
- Service Connector: 19371195
- Description: 5-Way F 1.2 MCON-CB Series, Sealed( BK)

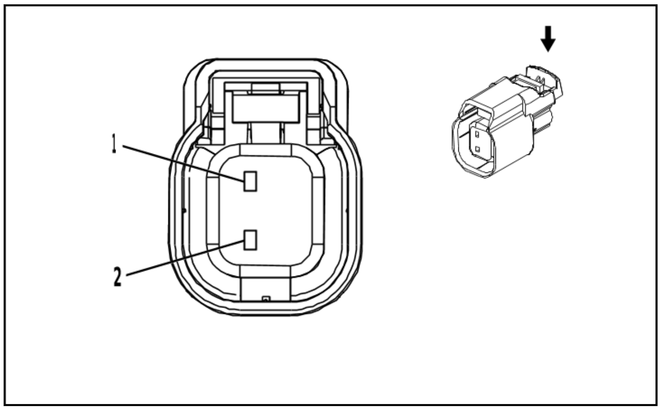
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### Q14B Exhaust Gas Recirculation Valve 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / YE | (1) 548 | (1) Engine Control Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / GN | (2) 4012 | (2) Exhaust Gas Recirculation 2 Valve Position Sensor Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / RD | (3) 460 | (3) Engine Control Sensors 5 Volt Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / WH | (4) 4014 | (4) Exhaust Gas Recirculation 2 Valve Open Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BU / BN | (5) 4013 | (5) Exhaust Gas Recirculation 2 Valve Close Control | (5) I | (5) — |

### Q17A Fuel Injector 1 (L84 / L87)



2792100

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

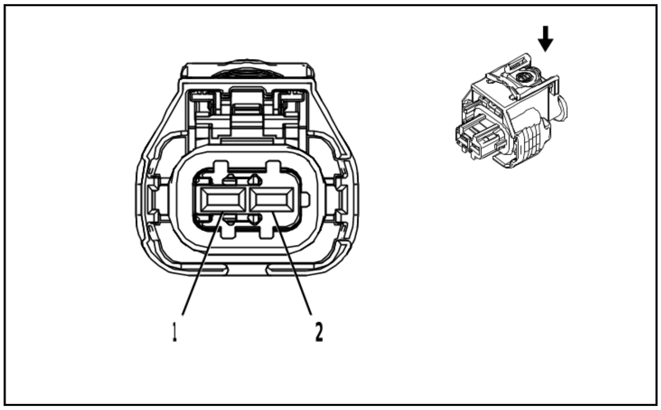
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17A Fuel Injector 1 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) BN / WH | (1) 4901 | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) BN | (2) 4801 | (2) Direct Fuel Injector High Voltage Control Cylinder 1 | (2) I | (2) — |

### Q17A Fuel Injector 1 (LZ0)



2845578

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

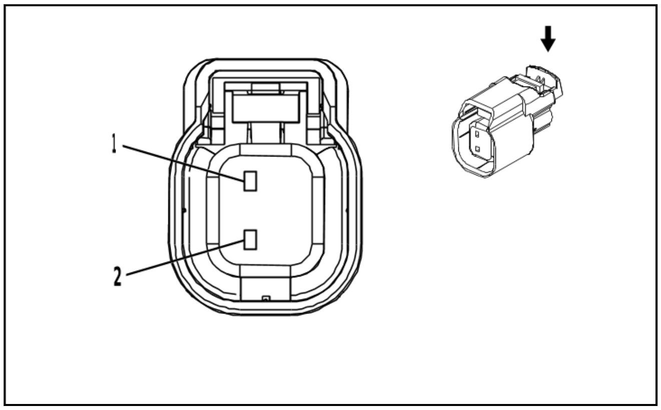
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17A Fuel Injector 1 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BN / WH | (1) 4901 | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) BN | (2) 4801 | (2) Direct Fuel Injector High Voltage Control Cylinder 1 | (2) I | (2) — |

### Q17B Fuel Injector 2 (L84 / L87)



2792100

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

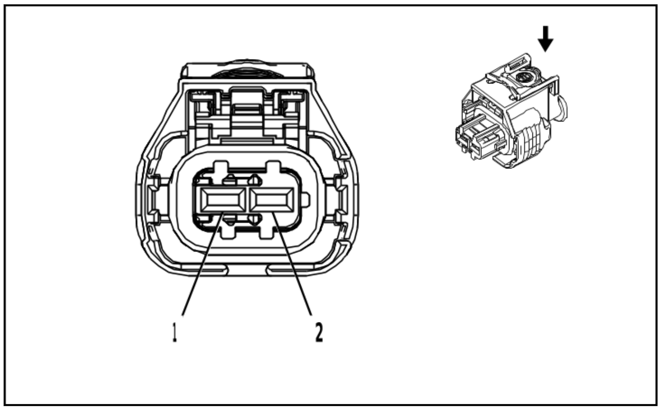
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17B Fuel Injector 2 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) Direct Fuel Injector High Voltage Supply Cylinder 2 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 4802 | (2) Direct Fuel Injector High Voltage Control Cylinder 2 | (2) I | (2) — |

### Q17B Fuel Injector 2 (LZ0)



2845578

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

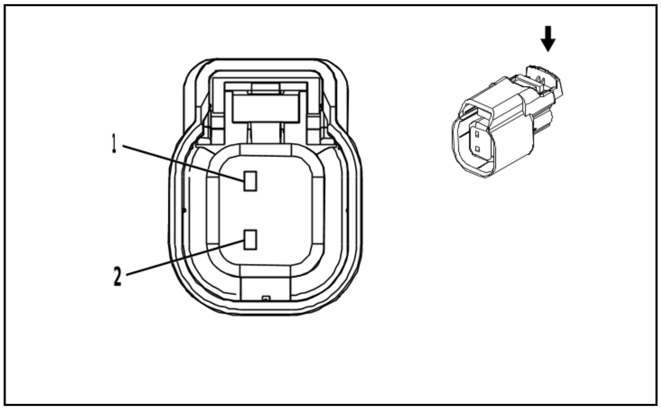
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17B Fuel Injector 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BU / GY | (1) 4902 | (1) Direct Fuel Injector High Voltage Supply Cylinder 2 | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) BU | (2) 4802 | (2) Direct Fuel Injector High Voltage Control Cylinder 2 | (2) I | (2) — |

### Q17C Fuel Injector 3 (L84 / L87)



2792100

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

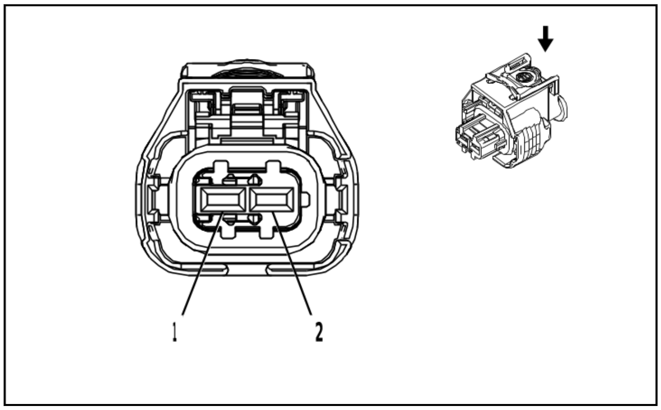
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17C Fuel Injector 3 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) GN / GY | (1) 4903 | (1) Direct Fuel Injector High Voltage Supply Cylinder 3 | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) GN | (2) 4803 | (2) Direct Fuel Injector High Voltage Control Cylinder 3 | (2) I | (2) — |

### Q17C Fuel Injector 3 (LZ0)



2845578

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

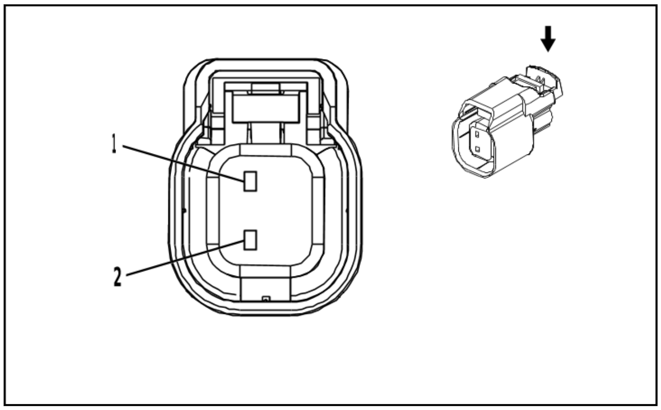
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17C Fuel Injector 3 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / GY | (1) 4903 | (1) Direct Fuel Injector High Voltage Supply Cylinder 3 | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) GN | (2) 4803 | (2) Direct Fuel Injector High Voltage Control Cylinder 3 | (2) I | (2) — |

## Q17D Fuel Injector 4 (L84 / L87)



2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

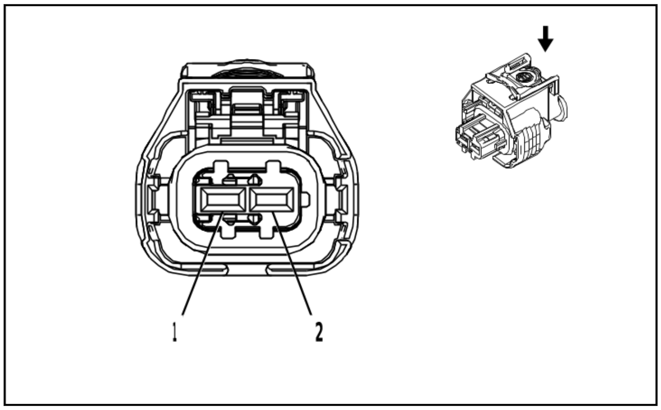
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

### Q17D Fuel Injector 4 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / WH | (1) 4904 | (1) Direct Fuel Injector High Voltage Supply Cylinder 4 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / BU | (2) 4804 | (2) Direct Fuel Injector High Voltage Control Cylinder 4 | (2) I | (2) — |

## Q17D Fuel Injector 4 (LZ0)



2845578

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

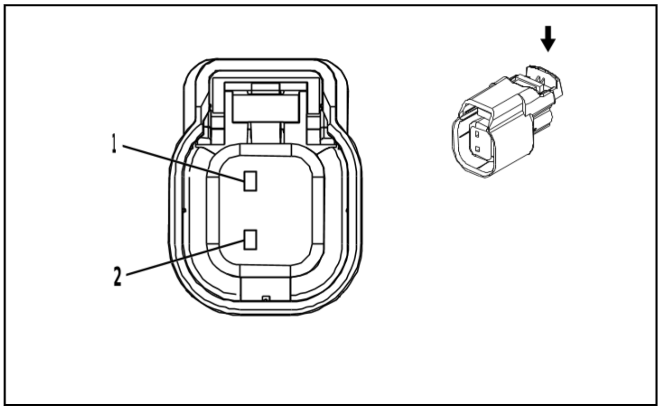
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17D Fuel Injector 4 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BU / WH | (1) 4904 | (1) Direct Fuel Injector High Voltage Supply Cylinder 4 | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) GY / BU | (2) 4804 | (2) Direct Fuel Injector High Voltage Control Cylinder 4 | (2) I | (2) — |

### Q17E Fuel Injector 5 (L84 / L87)



2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

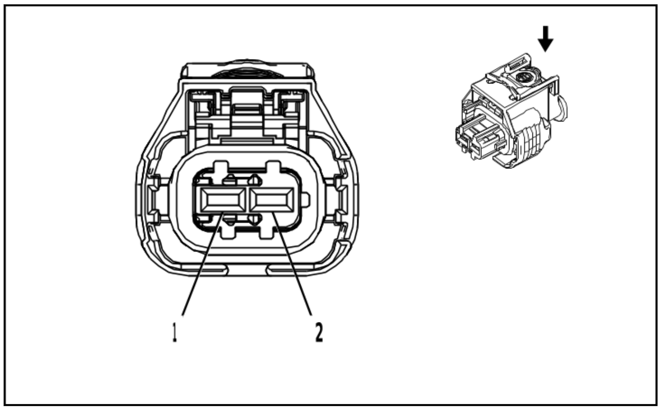
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17E Fuel Injector 5 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) GN / WH | (1) 4905 | (1) Direct Fuel Injector High Voltage Supply Cylinder 5 | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) WH / GN | (2) 4805 | (2) Direct Fuel Injector High Voltage Control Cylinder 5 | (2) I | (2) — |

## Q17E Fuel Injector 5 (LZ0)



2845578

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

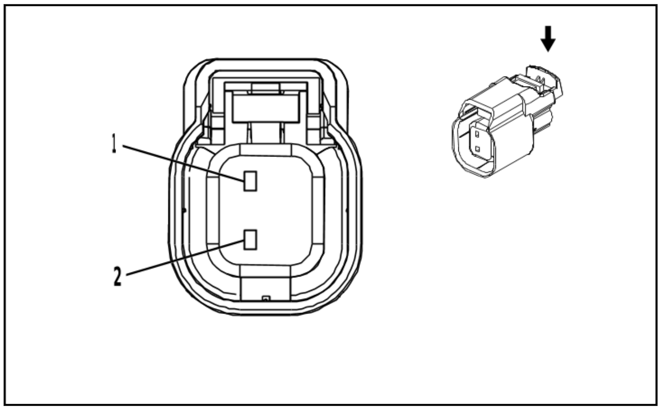
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

### Q17E Fuel Injector 5 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) GN / WH | (1) 4905 | (1) Direct Fuel Injector High Voltage Supply Cylinder 5 | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) WH / GN | (2) 4805 | (2) Direct Fuel Injector High Voltage Control Cylinder 5 | (2) I | (2) — |

## Q17F Fuel Injector 6 (L84 / L87)



2792100

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

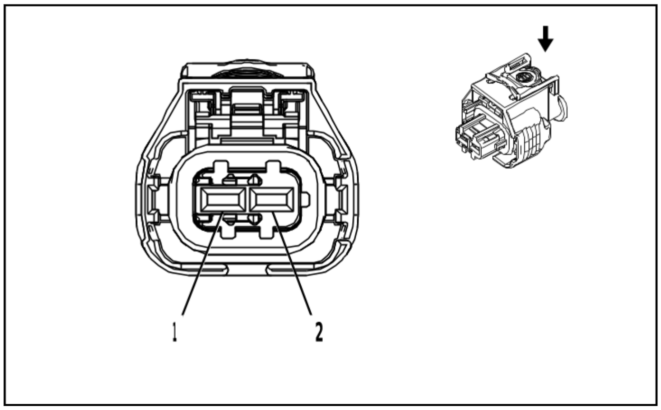
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17F Fuel Injector 6 (L84 / L87)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) VT / GY | (1) 4906 | (1) Direct Fuel Injector High Voltage Supply Cylinder 6 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) VT / GN | (2) 4806 | (2) Direct Fuel Injector High Voltage Control Cylinder 6 | (2) I | (2) — |

### Q17F Fuel Injector 6 (LZ0)



2845578

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 1 928 405 715
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 2.8 Series, Sealed( BK)

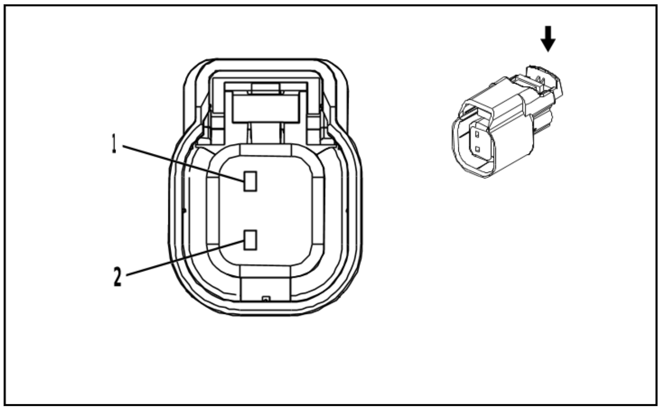
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q17F Fuel Injector 6 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) VT / GY | (1) 4906 | (1) Direct Fuel Injector High Voltage Supply Cylinder 6 | (1) I | (1) — |
| (2) 2 | (2) 1.5 | (2) VT / GN | (2) 4806 | (2) Direct Fuel Injector High Voltage Control Cylinder 6 | (2) I | (2) — |

### Q17G Fuel Injector 7



2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

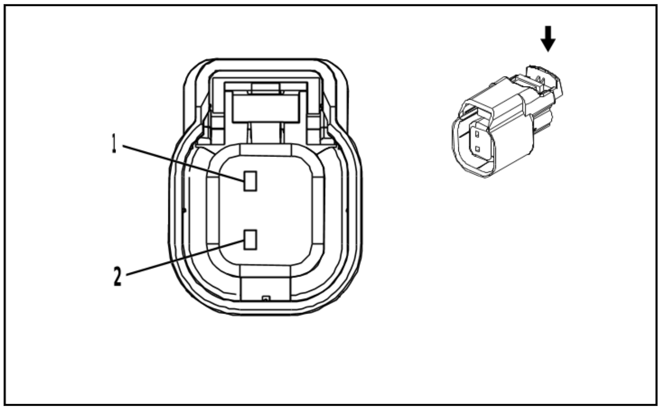
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17G Fuel Injector 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 18 | (1) WH / YE | (1) 4907 | (1) Direct Fuel Injector High Voltage Supply Cylinder 7 | (1) I | (1) — |
| (2) 2 | (2) 18 | (2) YE / GY | (2) 4807 | (2) Direct Fuel Injector High Voltage Control Cylinder 7 | (2) I | (2) — |

### Q17H Fuel Injector 8



2792100

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 340624008
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.5 Series, Sealed( BK)

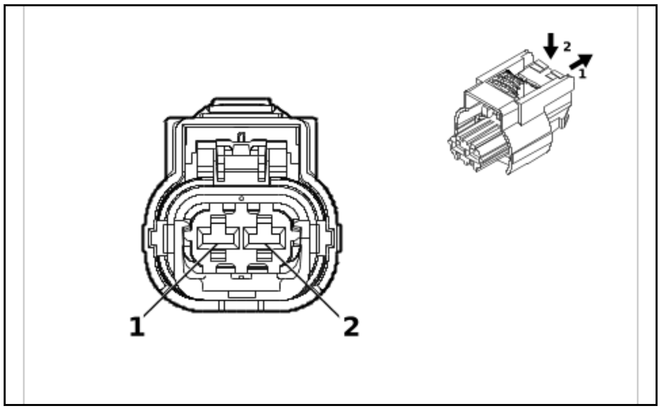
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |

## Q17H Fuel Injector 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / WH | (1) 4908 | (1) Direct Fuel Injector High Voltage Supply Cylinder 8 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY | (2) 4808 | (2) Direct Fuel Injector High Voltage Control Cylinder 8 | (2) I | (2) — |

### Q18A Fuel Pressure Regulator 1 (LZ0)



4992524

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

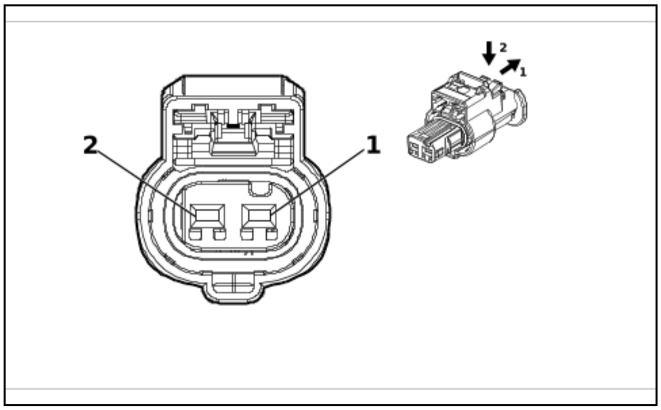
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## Q18A Fuel Pressure Regulator 1 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE / VT | (1) 7245 | (1) High Pressure Fuel Pump Low Enable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / BN | (2) 7244 | (2) High Pressure Fuel Pump High Side Control | (2) I | (2) — |

## Q18B Fuel Pressure Regulator 2 (LZ0)



6055996

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 5-2297795-1
- Service Connector: 85625525
- Description: 2-Way F 1.2 HPF Series, Sealed( BK)

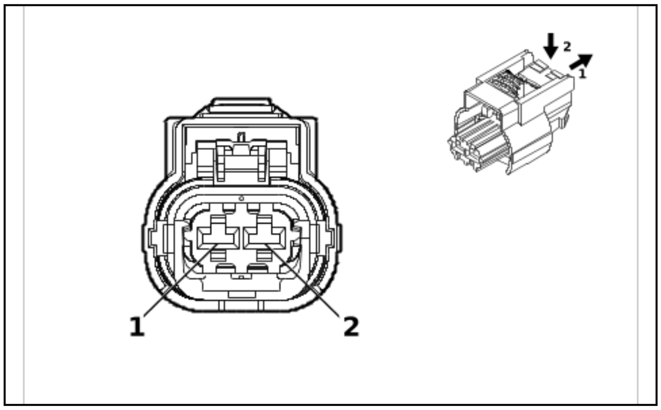
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### Q18B Fuel Pressure Regulator 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / YE | (1) 2834 | (1) Fuel Rail Pressure Solenoid Valve Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / WH | (2) 2530 | (2) Fuel Rail Pressure Solenoid Valve Control | (2) I | (2) — |

## Q18C Fuel Pressure Regulator 3 (LZ0)



4992524

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35182447
- Service Connector: 84941154
- Description: 2-Way F 2.8 MCP Series, Sealed( BK)

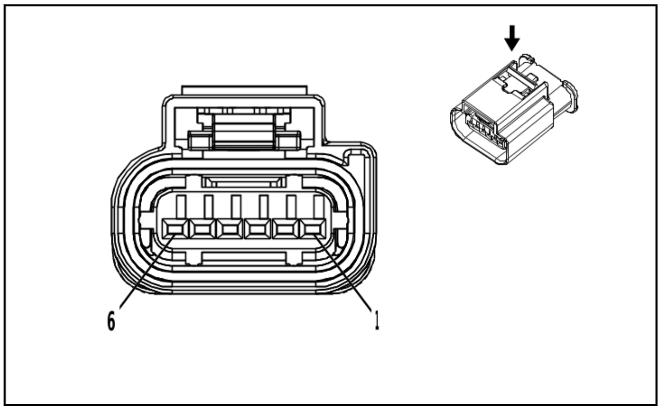
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q18C Fuel Pressure Regulator 3 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE | (1) 2420 | (1) Fuel High Pressure Pump Low Enable Signal | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY | (2) 2419 | (2) Fuel High Pressure Pump High Side Supply Voltage | (2) I | (2) — |

### Q20 Intake Airflow Control Valve (LZ0)



3747579

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed( BK)

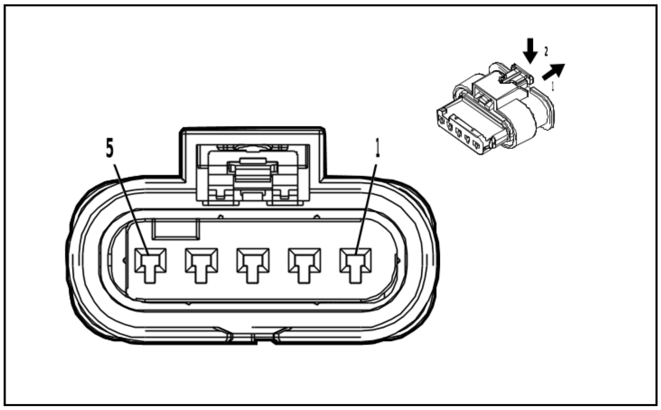
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q20 Intake Airflow Control Valve (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) YE | (1) 581 | (1) Throttle Actuator Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / WH | (2) 582 | (2) Throttle Actuator Close Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 3630 | (3) Throttle Position Sensor SENT 1 Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / YE | (4) 548 | (4) Engine Control Sensors Low Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / RD | (5) 460 | (5) Engine Control Sensors 5 Volt Reference 1 | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

## Q22 Intake Manifold Tuning Solenoid Valve (LZ0)



3338689

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-1718806-1
- Service Connector: 19119351
- Description: 5-Way F 1.2 MCON-LL Series, Sealed( BK)

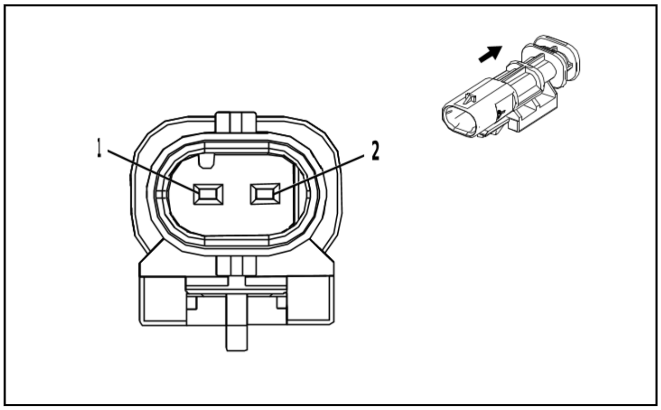
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q22 Intake Manifold Tuning Solenoid Valve (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / YE | (1) 548 | (1) Engine Control Sensors Low Reference 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 7316 | (2) Intake Manifold Runner Valve Actuator Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / RD | (3) 460 | (3) Engine Control Sensors 5 Volt Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BK / BU | (4) 1408 | (4) Variable Swirl Valve Close Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BK / GN | (5) 1389 | (5) Variable Swirl Valve Open Control | (5) I | (5) — |

### Q37LFB Front Shock Absorber Actuator - Left (Z95)



2474755

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

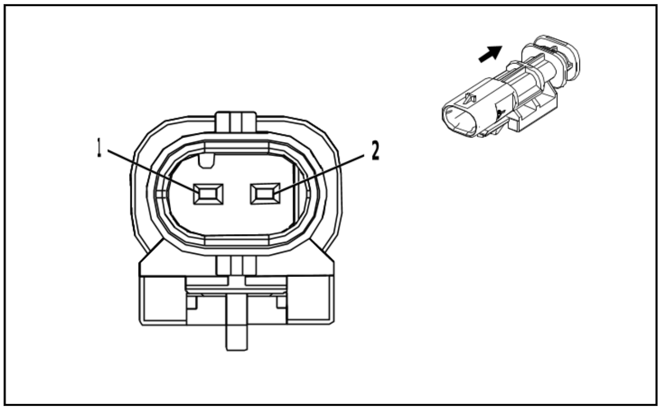
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## Q37LFB Front Shock Absorber Actuator - Left (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 1107 | (1) Left Front Shock Absorber Actuator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / BU | (2) 1113 | (2) Left Front Shock Absorber Actuator Control | (2) I | (2) — |

### Q37LRB Rear Shock Absorber Actuator - Left (Z95)



2474755

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

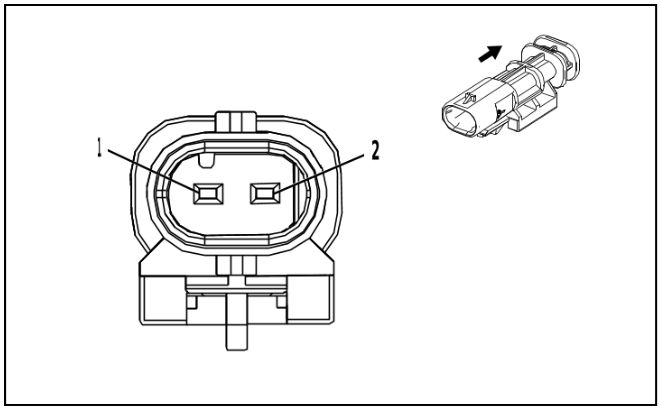
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## Q37LRB Rear Shock Absorber Actuator - Left (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / GY | (1) 1114 | (1) Left Rear Shock Absorber Actuator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 1115 | (2) Left Rear Shock Absorber Actuator Control | (2) I | (2) — |

### Q37RFB Front Shock Absorber Actuator - Right (Z95)



2474755

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

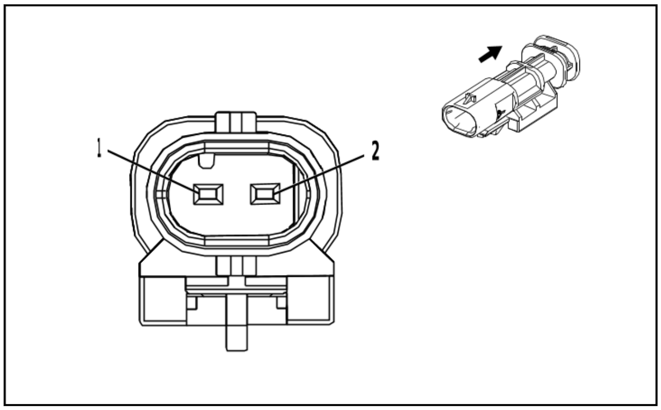
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## Q37RFB Front Shock Absorber Actuator - Right (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BU | (1) 1116 | (1) Right Front Shock Absorber Actuator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY / WH | (2) 1117 | (2) Right Front Shock Absorber Actuator Control | (2) I | (2) — |

### Q37RRB Rear Shock Absorber Actuator - Right (Z95)



2474755

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

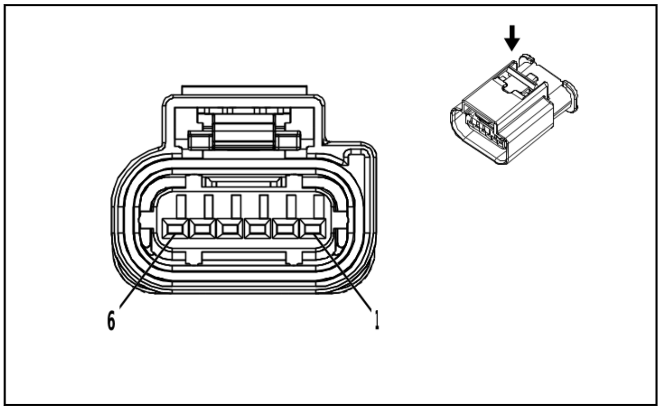
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## Q37RRB Rear Shock Absorber Actuator - Right (Z95)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GN | (1) 1118 | (1) Right Rear Shock Absorber Actuator Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 1119 | (2) Right Rear Shock Absorber Actuator Control | (2) I | (2) — |

### Q38 Throttle Body



3747579

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 2272975-5
- Service Connector: 19352911
- Description: 6-Way F 1.2 MCON Series, Sealed( BK)

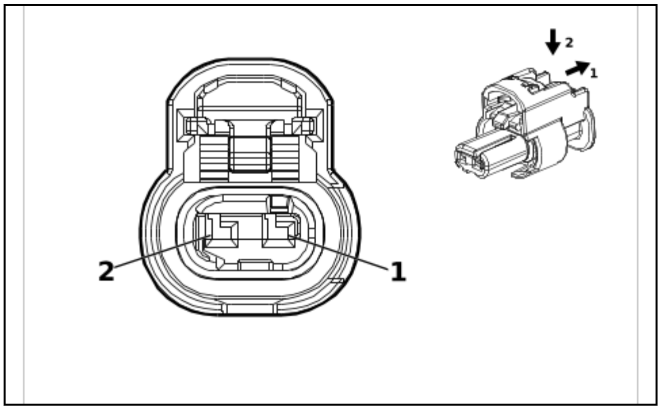
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q38 Throttle Body

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 581 | (1) Throttle Actuator Open Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / WH | (2) 582 | (2) Throttle Actuator Close Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / WH | (3) 3630 | (3) Throttle Position Sensor SENT 1 Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BN | (4) 2752 | (4) Throttle Position Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BN / RD | (5) 2701 | (5) Throttle Position Sensor 5V Reference | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### Q44 Engine Oil Pressure Control Solenoid Valve



4036662

**Connector Part Information**

- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

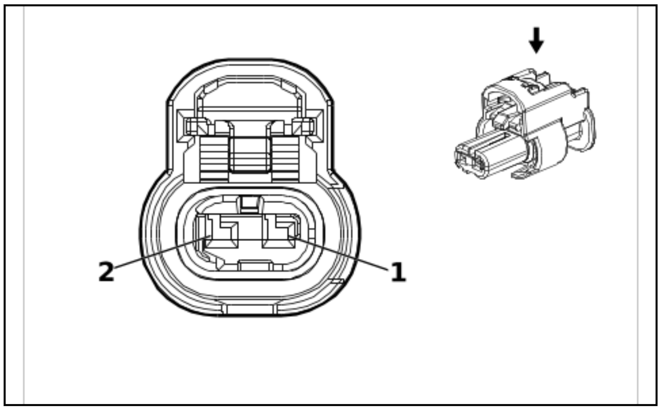
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q44 Engine Oil Pressure Control Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.5 | (1) VT / BU<br>(1) YE / BN | (1) 5293<br>(1) 106 | (1) Powertrain Main Relay Fused Supply Voltage 4<br>(1) Oil Pump Motor Control | (1) I<br>(1) I | (1) L87<br>(1) LZ0 |
| (2) 2 | (2) 0.5 | (2) BU | (2) 179 | (2) Engine Oil Pump Control | (2) I | (2) — |

### Q46 Air Conditioning Compressor Solenoid Valve



4335931

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1-2296694-2
- Service Connector: 19366843
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

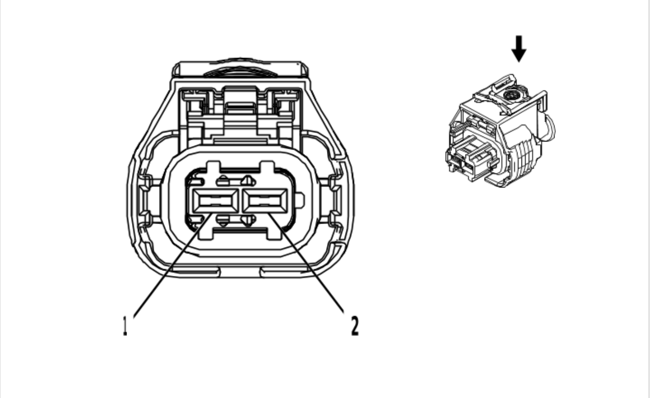
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q46 Air Conditioning Compressor Solenoid Valve

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / YE | (1) 7574 | (1) Air Conditioning Compressor Solenoid Valve Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / BN | (2) 7573 | (2) Air Conditioning Compressor Solenoid Valve Control | (2) I | (2) — |

### Q61 Reductant Fluid Injector



2577394

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed( BK)

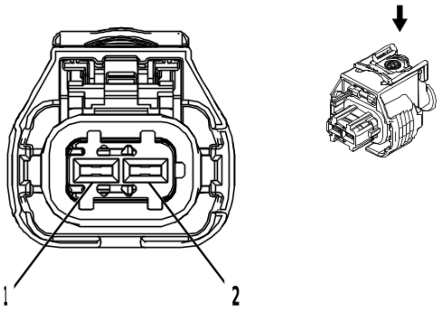
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q61 Reductant Fluid Injector

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / WH | (1) 3100 | (1) Diesel Exhaust Fluid Dosing Valve Low Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BN | (2) 3099 | (2) Diesel Exhaust Fluid Dosing Valve High Control | (2) I | (2) — |

### Q61B Reductant Fluid Injector 2 (LZ0)



2577394

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 1 928 405 714
- Service Connector: 13384371
- Description: 2-Way F 2.8 Series, Sealed( BK)

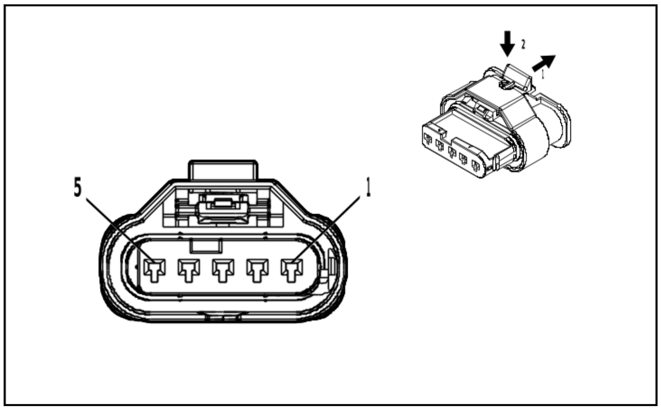
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## Q61B Reductant Fluid Injector 2 (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / YE | (1) 11616 | (1) Diesel Exhaust Fluid Dosing Valve Low Control 2 | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU | (2) 11615 | (2) Diesel Exhaust Fluid Dosing Valve High Control 2 | (2) I | (2) — |

## Q74 Engine Coolant Bypass Valve (LZ0)



4994456

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2236898-5
- Service Connector: 19371191
- Description: 5-Way F 1.2 MCON-LL Series, Sealed( NA)

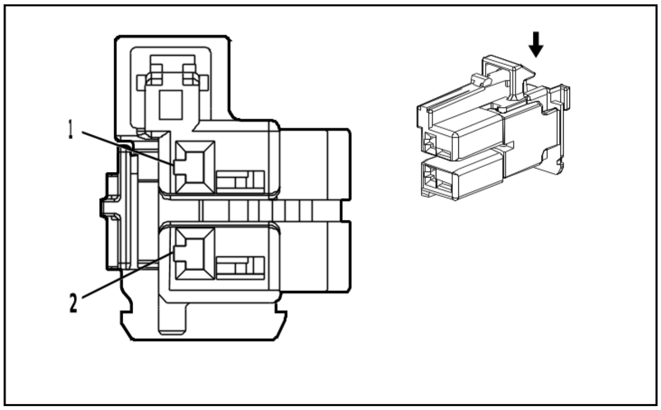
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

### Q74 Engine Coolant Bypass Valve (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 2976 | (1) Coolant Diverter Valve Actuator Control Open | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / BN | (2) 2977 | (2) Coolant Diverter Valve Actuator Control Close | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) WH / RD | (3) 480 | (3) Engine Control Vehicle Sensors 5 Volt Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / GY | (4) 2978 | (4) Coolant Diverter Valve Position Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / GN | (5) 580 | (5) Engine Control Sensors Low Reference 2 | (5) I | (5) — |

### Q77A Transmission Control Solenoid Valve 1



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

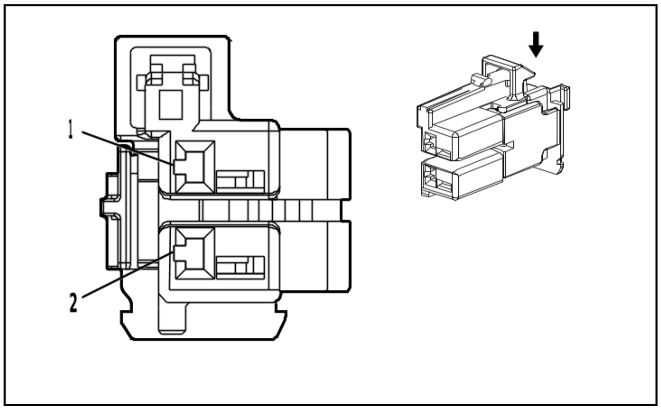
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77A Transmission Control Solenoid Valve 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU / GN | (2) 12461 | (2) Transmission Valve 1 Solenoid Control | (2) I | (2) — |

### Q77B Transmission Control Solenoid Valve 2



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

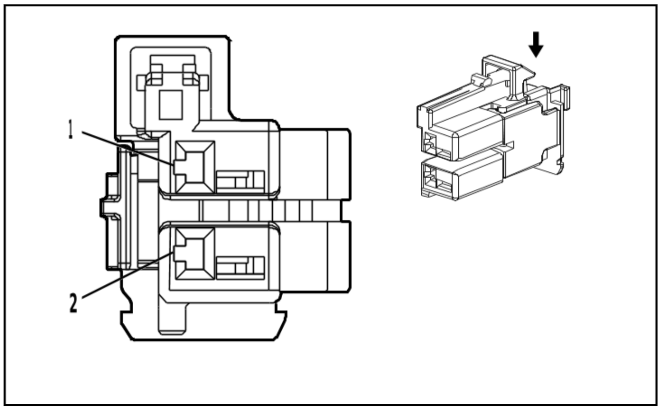
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77B Transmission Control Solenoid Valve 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) GN / BN | (2) 12462 | (2) Transmission Valve 2 Solenoid Control | (2) I | (2) — |

### Q77C Transmission Control Solenoid Valve 3



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

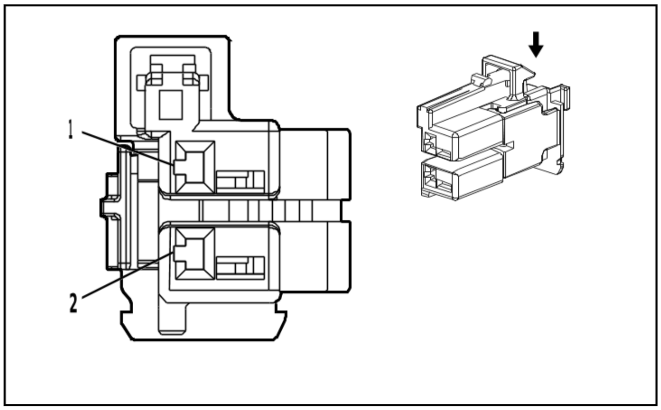
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77C Transmission Control Solenoid Valve 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) GY | (2) 12463 | (2) Transmission Valve 3 Solenoid Control | (2) I | (2) — |

### Q77D Transmission Control Solenoid Valve 4



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

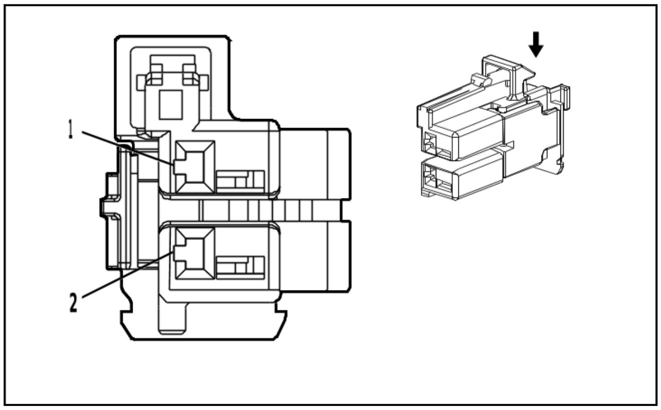
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77D Transmission Control Solenoid Valve 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / WH | (2) 12464 | (2) Transmission Valve 4 Solenoid Control | (2) I | (2) — |

### Q77E Transmission Control Solenoid Valve 5



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

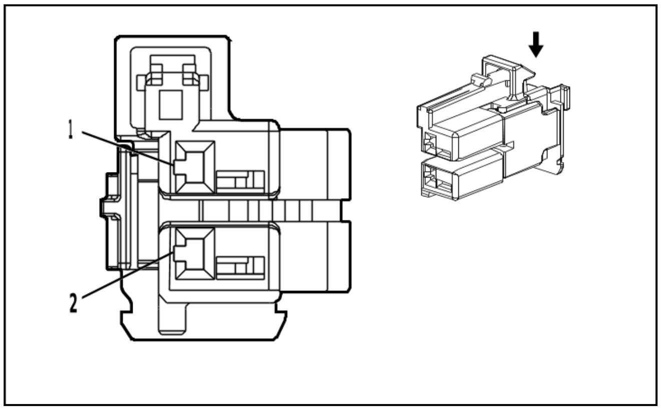
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77E Transmission Control Solenoid Valve 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) YE / VT | (2) 12465 | (2) Transmission Valve 5 Solenoid Control | (2) I | (2) — |

### Q77F Transmission Control Solenoid Valve 6



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

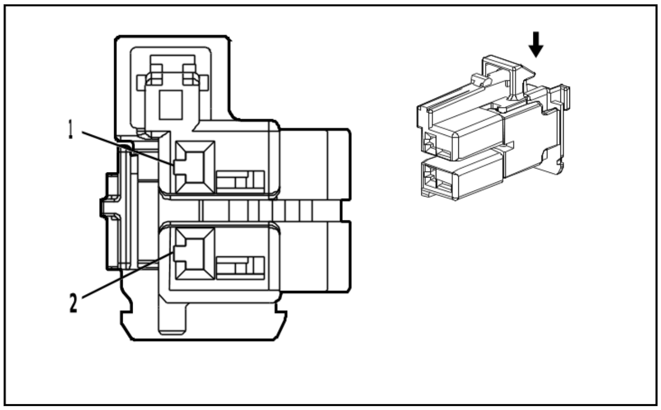
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77F Transmission Control Solenoid Valve 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) BU / GY | (2) 12466 | (2) Transmission Valve 6 Solenoid Control | (2) I | (2) — |

### Q77G Transmission Control Solenoid Valve 7



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

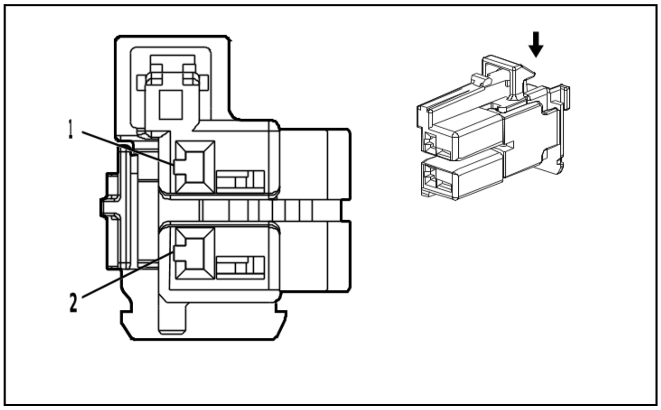
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77G Transmission Control Solenoid Valve 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BN | (1) 6387 | (1) Transmission High Side Driver 1 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) GN / OG | (2) 1530 | (2) Transmission Line Pressure Control Solenoid Valve Control | (2) I | (2) — |

### Q77H Transmission Control Solenoid Valve 8



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

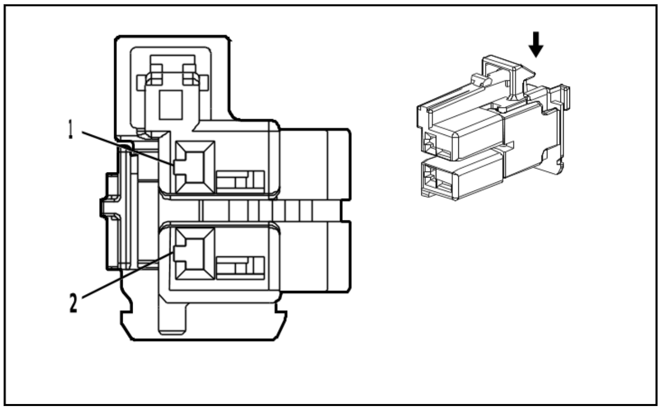
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77H Transmission Control Solenoid Valve 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BN | (1) 6387 | (1) Transmission High Side Driver 1 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) GY / BN | (2) 422 | (2) Torque Converter Clutch Solenoid Valve Control | (2) I | (2) — |

### Q77J Transmission Control Solenoid Valve 9



4672650

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness - Case
- OEM Connector: 13540048
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BN)

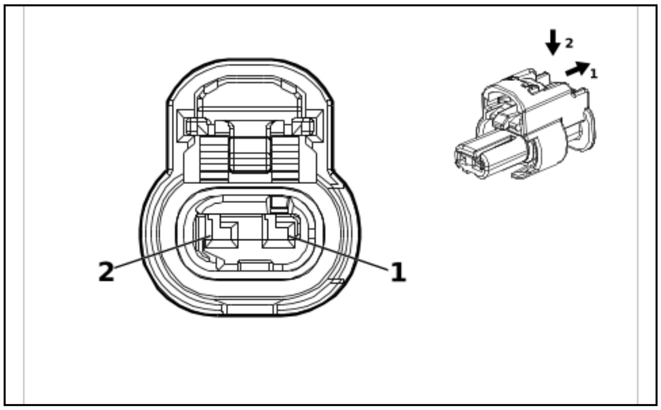
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## Q77J Transmission Control Solenoid Valve 9

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) WH | (1) 6388 | (1) Transmission High Side Driver 2 Control | (1) I | (1) — |
| (2) 2 | (2) — | (2) VT | (2) 12513 | (2) Transmission Default Disable Solenoid Control | (2) I | (2) — |

### Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

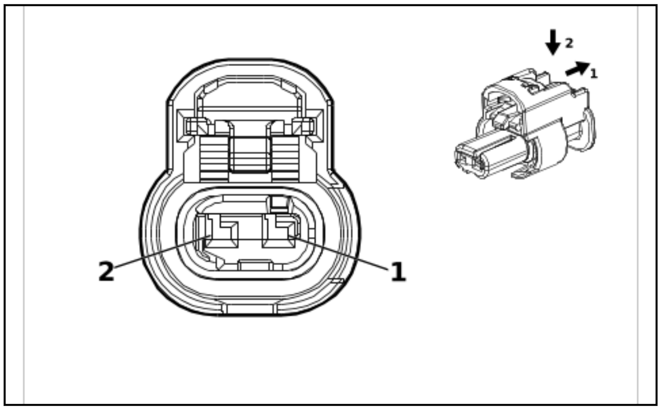
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 2491 | (1) Cylinder Shutoff Solenoid Enable Signal 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 5491 | (2) Cylinder Deactivation Solenoid Valve Control 1 | (2) I | (2) — |

### Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

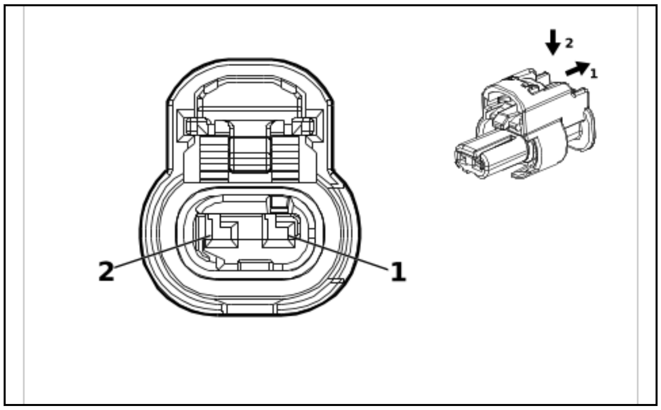
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / GN | (1) 2492 | (1) Cylinder Shutoff Solenoid Enable Signal 2 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 5492 | (2) Cylinder Deactivation Solenoid Valve Control 2 | (2) I | (2) — |

### Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3



4036662

**Connector Part Information**
- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

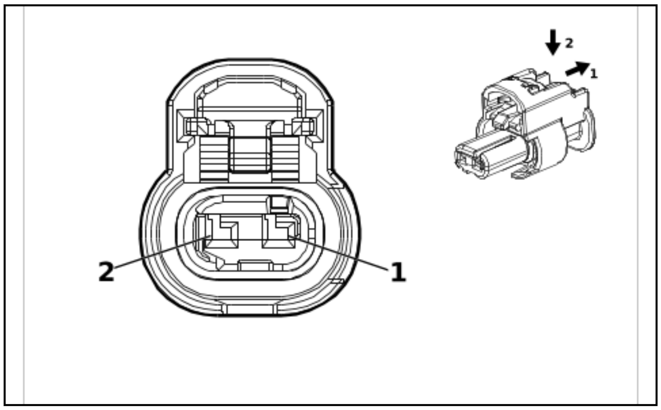
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GY | (1) 2493 | (1) Cylinder Shutoff Solenoid Enable Signal 3 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GY | (2) 5493 | (2) Cylinder Deactivation Solenoid Valve Control 3 | (2) I | (2) — |

### Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

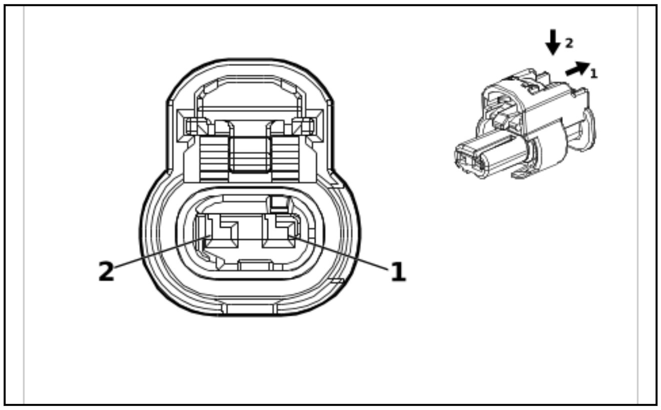
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GN | (1) 2494 | (1) Cylinder Shutoff Solenoid Enable Signal 4 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BU | (2) 5494 | (2) Cylinder Deactivation Solenoid Valve Control 4 | (2) I | (2) — |

### Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

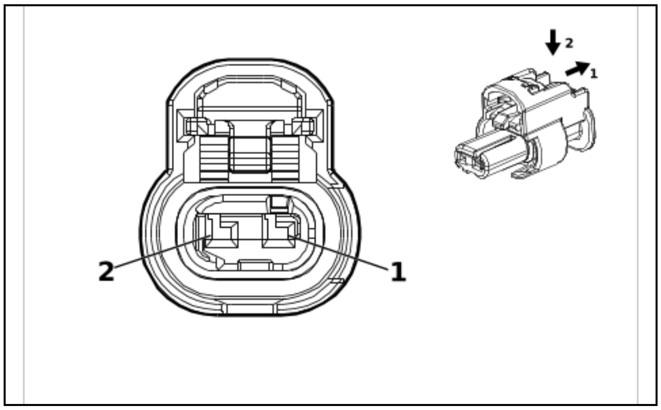
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / VT | (1) 2495 | (1) Cylinder Shutoff Solenoid Enable Signal 5 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT | (2) 5495 | (2) Cylinder Deactivation Solenoid Valve Control 5 | (2) I | (2) — |

### Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

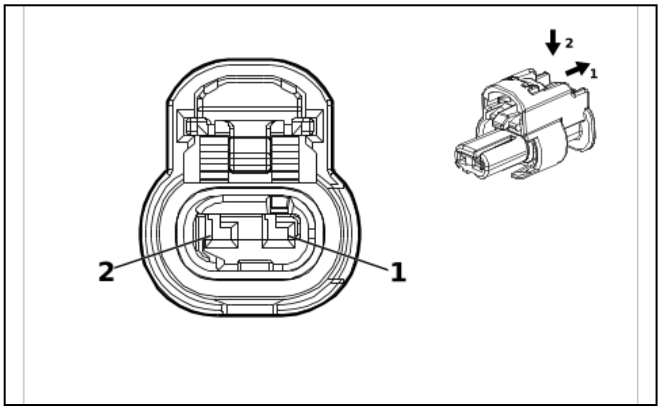
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BN | (1) 2496 | (1) Cylinder Shutoff Solenoid Enable Signal 6 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN | (2) 5496 | (2) Cylinder Deactivation Solenoid Valve Control 6 | (2) I | (2) — |

### Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

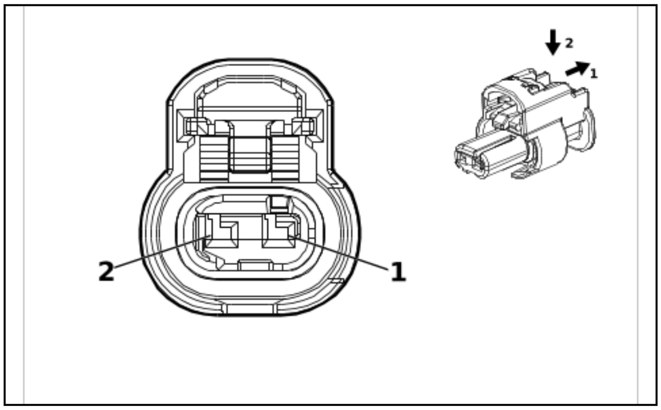
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / GY | (1) 2497 | (1) Cylinder Shutoff Solenoid Enable Signal 7 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH | (2) 5497 | (2) Cylinder Deactivation Solenoid Valve Control 7 | (2) I | (2) — |

### Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8



4036662

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 1-2296704-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON-CB Series, Sealed( BK)

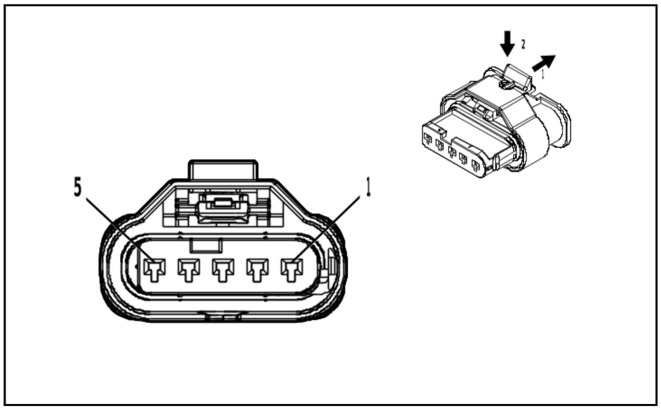
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / YE | (1) 2498 | (1) Cylinder Shutoff Solenoid Enable Signal 8 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 5498 | (2) Cylinder Deactivation Solenoid Valve Control 8 | (2) I | (2) — |

### Q97M Engine Coolant Flow Control Valve - Main (LZ0)



4994456

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 2-2236898-5
- Service Connector: 19371191
- Description: 5-Way F 1.2 MCON-LL Series, Sealed( NA)

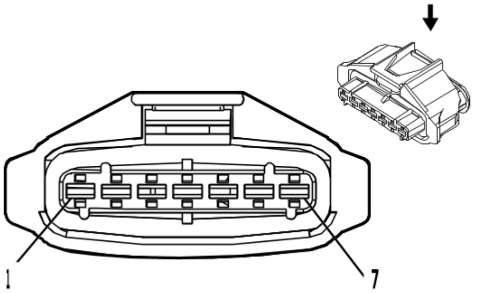
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## Q97M Engine Coolant Flow Control Valve - Main (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GY / BN | (1) 2972 | (1) Coolant Flow Control Actuator Control Close | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) GY / BU | (2) 2971 | (2) Coolant Flow Control Actuator Control Open | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / RD | (3) 460 | (3) Engine Control Sensors 5 Volt Reference 1 | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GY | (4) 2973 | (4) Coolant Flow Control Valve Position Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / YE | (5) 548 | (5) Engine Control Sensors Low Reference 1 | (5) I | (5) — |

### R29 Fuel Filter (LZ0)



2537256

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 10774827
- Service Connector: 19354080
- Description: 7-Way F 2.8 Junior Power Timer Series, Sealed( BK)

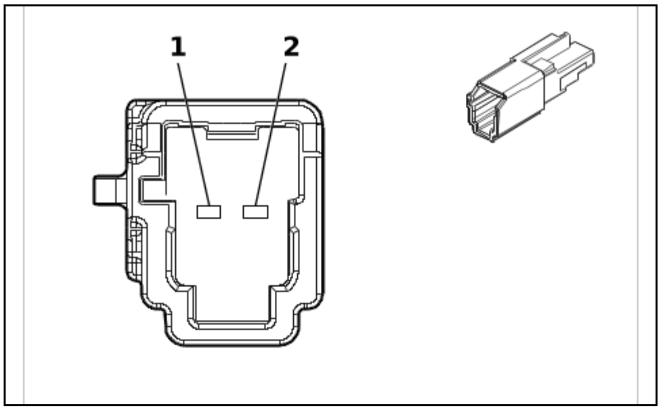
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |

## R29 Fuel Filter (LZ0)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1950 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 2.5 | (2) BN / YE | (2) 2996 | (2) Fuel Heater Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) VT / GN | (3) 4320 | (3) Powertrain Sensor Bus Enable | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 6863 | (4) Water In Fuel Sensor Low Reference | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / YE | (5) 6861 | (5) Water In Fuel Sensor Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / GY | (6) 7072 | (6) Fuel Temperature Sensor 1 Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / WH | (7) 7073 | (7) Fuel Temperature Sensor 1 Low Reference | (7) I | (7) — |

### R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp X1



6529124

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0610
- Service Connector: 85725003
- Description: 2-Way M 1.2 MBS Series( BK)

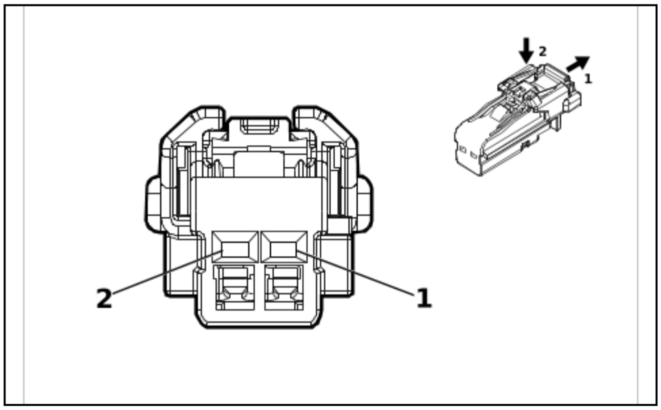
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 2050 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BN / YE | (2) 820 | (2) Center High Mounted Stop Lamp Supply Voltage | (2) I | (2) — |

### R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp X2



4115691

**Connector Part Information**

- Harness Type: Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp
- OEM Connector: 13532422
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

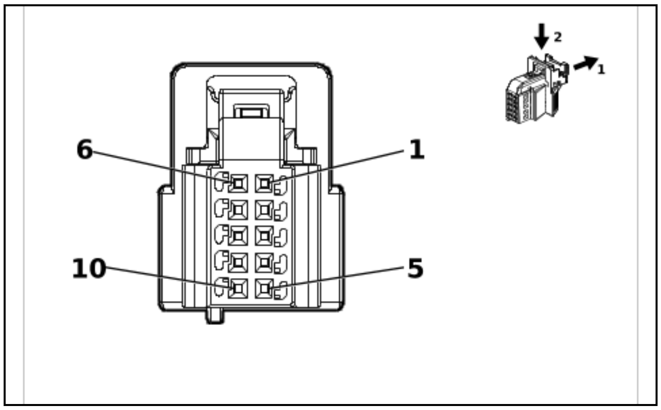
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 8350 | (1) Antenna Filter Ground | (1) I | (1) — |
| (2) 2 | (2) — | (2) BN / YE | (2) 820 | (2) Center High Mounted Stop Lamp Supply Voltage | (2) I | (2) — |

### S3B Automatic Transmission Electronic Control



5837272

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2310000-2
- Service Connector: 13518418
- Description: 10-Way F 0.64 MQS Series( GY)

## Terminal Part Information

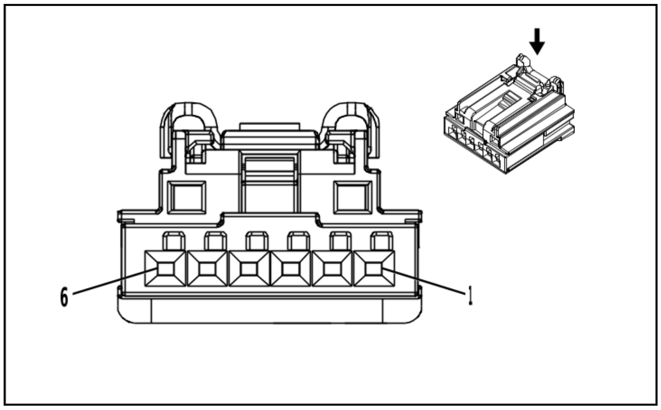
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |

## S3B Automatic Transmission Electronic Control

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / RD | (2) 480 | (2) Engine Control Vehicle Sensors 5 Volt Reference 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK / GN | (3) 580 | (3) Engine Control Sensors Low Reference 2 | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK / YE | (4) 548 | (4) Engine Control Sensors Low Reference 1 | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BN | (5) 10515 | (5) Electronic Transmission Range Select Shifter Position Sensor 1 Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) GN / WH | (6) 4622 | (6) Engine Control Module LIN Bus 2 | (6) I | (6) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) GY | (8) 10518 | (8) Electronic Transmission Range Select Shifter Position Sensor 2 Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BK / WH | (9) 1851 | (9) Signal Ground | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / RD | (10) 460 | (10) Engine Control Sensors 5 Volt Reference 1 | (10) I | (10) — |

### S13D Door Lock Switch - Driver



4145138

**Connector Part Information**
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

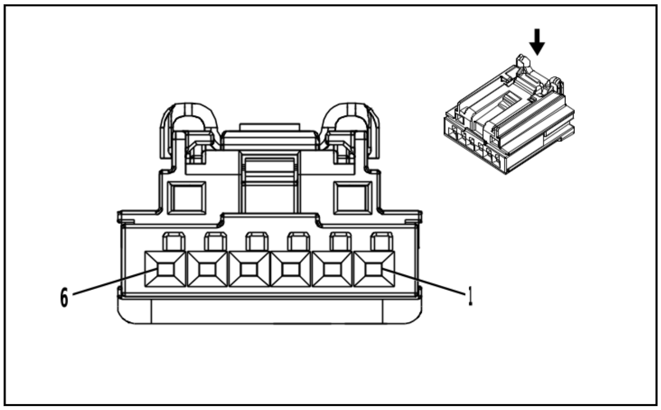
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13D Door Lock Switch - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / GY | (1) 4784 | (1) Left Front Door LED Backlight Dimming Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / YE | (2) 4244 | (2) Left Front Door Lock Indicator Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / YE | (3) 2771 | (3) Left Front Door Lock Switch Lock Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / WH | (4) 2772 | (4) Left Front Door Lock Switch Unlock Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK | (5) 1150 | (5) Ground | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

## S13LR Door Lock Switch - Left Rear



4145138

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

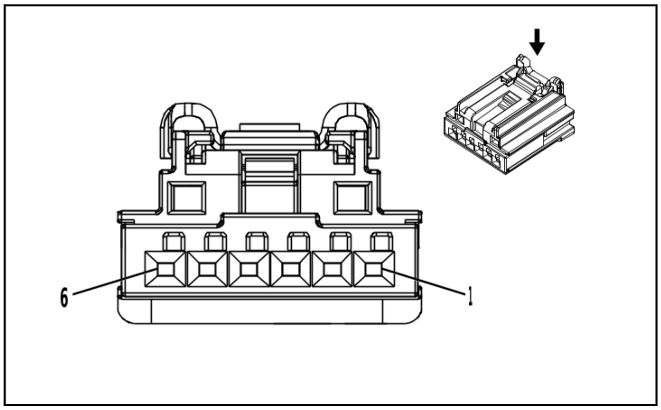
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13LR Door Lock Switch - Left Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 6817 | (1) LED Backlight Dimming Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / WH | (2) 6675 | (2) Left Rear Door Lock Indicator Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) VT / BU | (3) 4001 | (3) Left Rear Door Lock Switch Lock Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / YE | (4) 4002 | (4) Left Rear Door Lock Switch Unlock Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK | (5) 1150 | (5) Ground | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

## S13P Door Lock Switch - Passenger



4145138

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

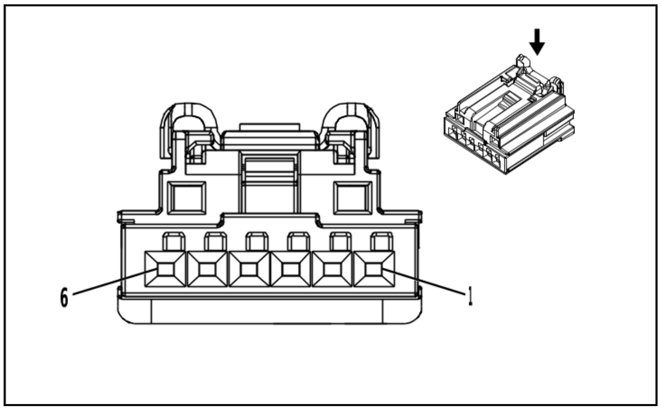
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13P Door Lock Switch - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / VT | (1) 4638 | (1) LED Backlight Dimming Control Right Front Door | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BU | (2) 4245 | (2) Right Front Door Lock Indicator Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) YE / VT | (3) 2773 | (3) Right Front Door Lock Switch Lock Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / VT | (4) 2774 | (4) Right Front Door Lock Switch Unlock Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK | (5) 1250 | (5) Ground | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

### S13RR Door Lock Switch - Right Rear



4145138

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

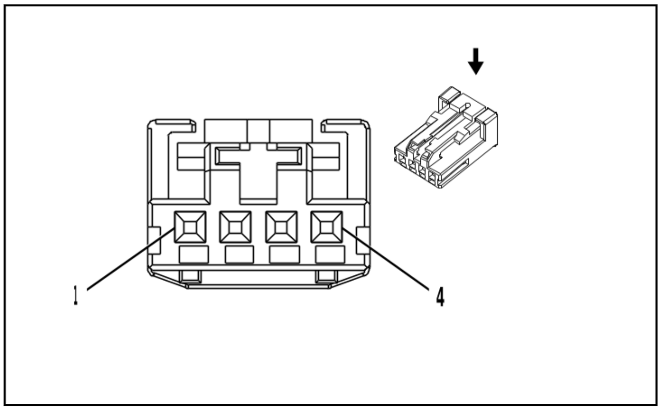
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S13RR Door Lock Switch - Right Rear

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) YE | (1) 6817 | (1) LED Backlight Dimming Control 1 | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / BK | (2) 6677 | (2) Right Rear Door Lock Indicator Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BN | (3) 4003 | (3) Right Rear Door Lock Switch Lock Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / GY | (4) 4004 | (4) Right Rear Door Lock Switch Unlock Control | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK | (5) 1250 | (5) Ground | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

## S26 Hazard Warning Switch



2717162

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-1
- Service Connector: 19367524
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

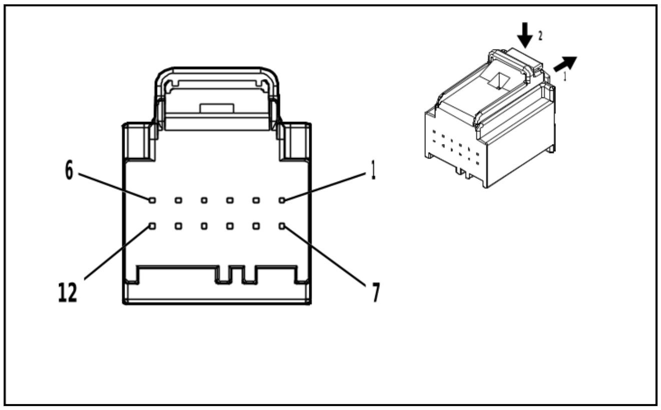
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S26 Hazard Warning Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / WH | (1) 111 | (1) Hazard Warning Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 1850 | (2) Ground | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) GY / YE | (4) 7543 | (4) Hazard Warning Indicator LED Dimming Signal | (4) I | (4) — |

### S30 Headlamp Switch



5095565

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 31410-0125
- Service Connector: 13525987
- Description: 12-Way F 0.64 Series( BK)

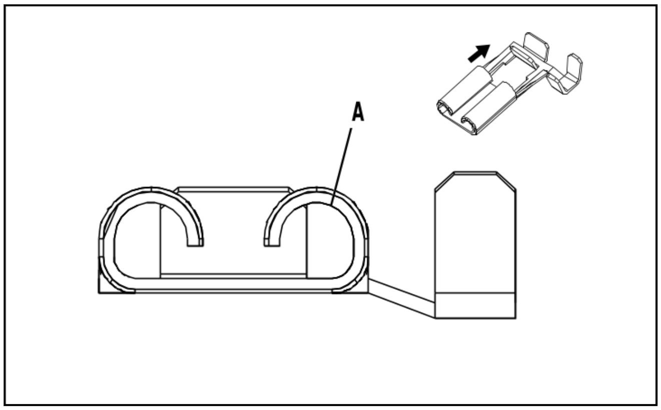
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13584547 | J-35616-64B (L-BU) | J-38125-215A |

## S30 Headlamp Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / VT | (1) 103 | (1) Headlamp Switch On Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BN | (3) 306 | (3) Headlamp Switch Off Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GN / GY | (5) 13 | (5) Headlamp Switch Park Lamp Signal | (5) I | (5) — |
| 6 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.35 | (8) BK | (8) 1850 | (8) Ground | (8) I | (8) — |
| 9 - 10 | — | — | — | Not Occupied | — | — |
| (11) 11 | (11) 0.35 | (11) WH / BN | (11) 7555 | (11) Headlamp Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) YE | (12) 7556 | (12) Headlamp Switch Reference | (12) I | (12) — |

### S33 Steering Wheel Horn Contact X1



3214054

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 1742086-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way F Fast-In-On Series

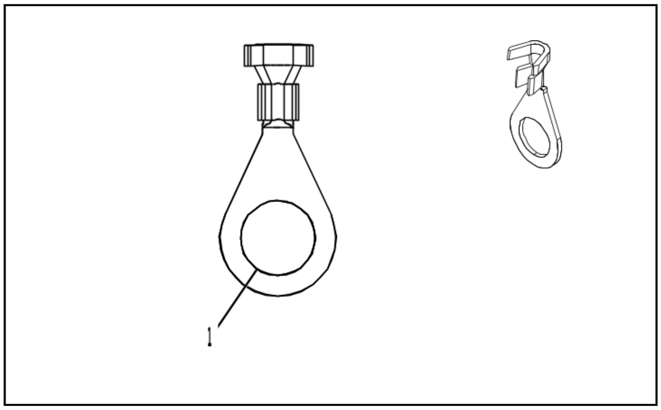
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## S33 Steering Wheel Horn Contact X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 0.35 | GN / WH | 3287 | Horn Switch Signal | I | — |

### S33 Steering Wheel Horn Contact X2



2753130

**Connector Part Information**
- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 42037-1
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way Ring Terminal

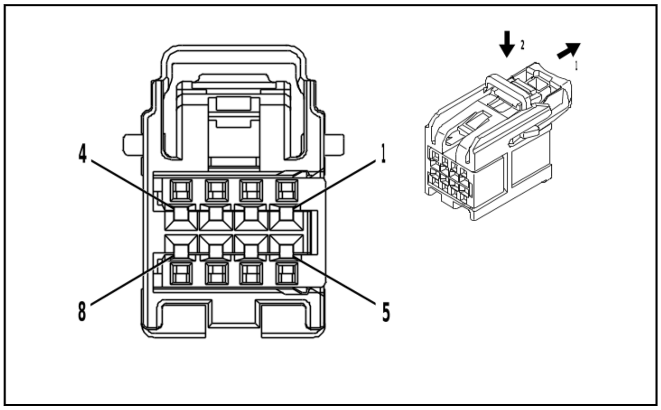
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## S33 Steering Wheel Horn Contact X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |

### S38 On/Off Vehicle Switch



4232228

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

## Terminal Part Information

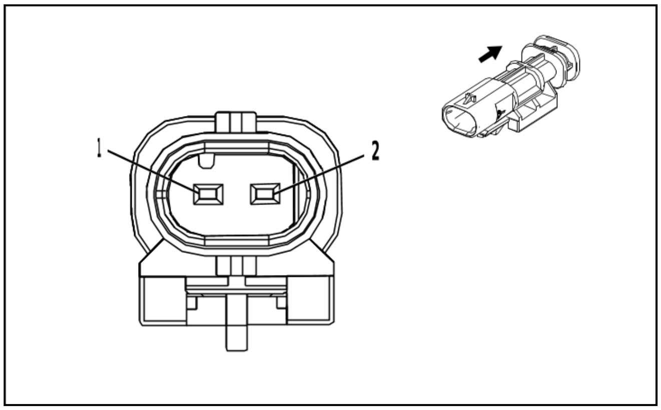
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S38 On/Off Vehicle Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BK | (1) 5719 | (1) Ignition Mode Switch Start LED Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BN / BK | (2) 5720 | (2) Ignition Mode Switch Accessory LED Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1851 | (3) Signal Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / GN | (4) 5723 | (4) Ignition Mode Switch Mode Voltage | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE | (5) 6817 | (5) LED Backlight Dimming Control 1 | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.35 | (7) BK / GY | (7) 3559 | (7) Passive Start Switch 2 Low Reference | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) GN / BK | (8) 3558 | (8) Passive Start Switch Signal 2 | (8) I | (8) — |

### S45A Liftgate Release Switch - Exterior



2474755

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

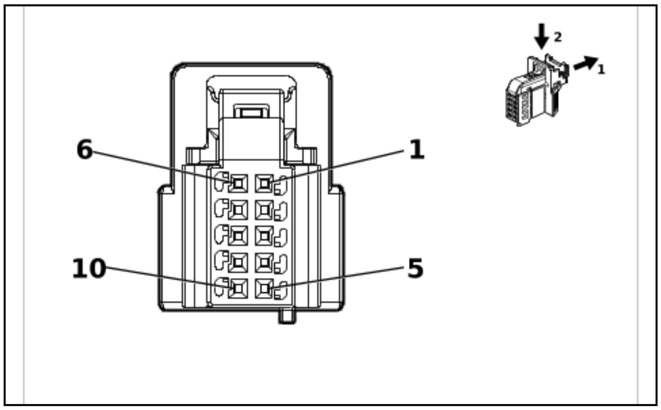
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-17 (L-GN) | No Tool Required |

## S45A Liftgate Release Switch - Exterior

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BU | (1) 5797 | (1) Rear Closure Handle Switch Open Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |

### S47D Front Seat Adjuster Memory Switch - Driver



5838155

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2310000-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.64 MQS Series( BK)

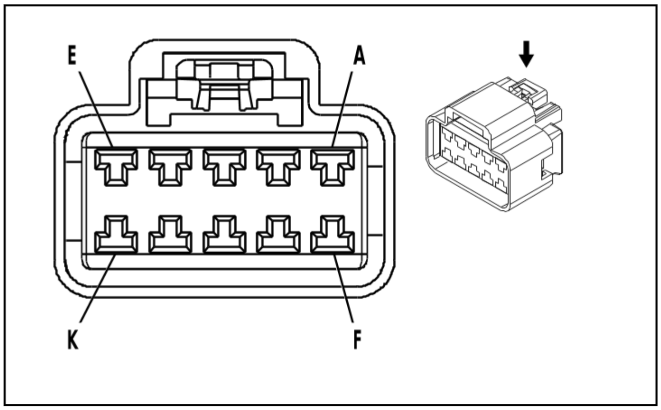
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S47D Front Seat Adjuster Memory Switch - Driver

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / GY | (1) 4784 | (1) Left Front Door LED Backlight Dimming Control | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / YE | (2) 4244 | (2) Left Front Door Lock Indicator Control | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / YE | (3) 2771 | (3) Left Front Door Lock Switch Lock Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / WH | (4) 2772 | (4) Left Front Door Lock Switch Unlock Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK / WH | (5) 1151 | (5) Signal Ground | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / GN | (6) 614 | (6) Seat Memory Switch Set Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 615 | (7) Seat Memory Switch Signal 1 | (7) I | (7) — |
| 8 - 10 | — | — | — | Not Occupied | — | — |

## S64D Front Seat Adjuster Switch - Driver (- (A45 / AUN))



623046

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series( BK)

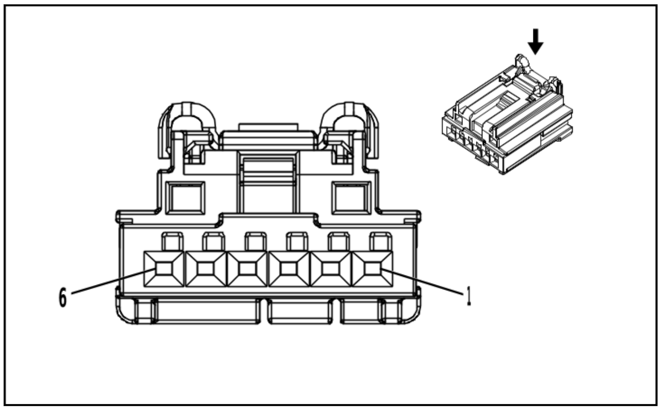
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### S64D Front Seat Adjuster Switch - Driver (- (A45 / AUN))

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| (3) 3 | (3) — | (3) GN / GY | (3) 3758 | (3) Driver Seat Adjuster Memory Module LIN Bus 2 | (3) I | (3) — |
| (4) 4 | (4) — | (4) BK | (4) 1150 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) — | (5) BU / YE | (5) 2818 | (5) Driver Seat Auxiliary Adjustment Switch Signal | (5) I | (5) — |
| (6) 6 | (6) — | (6) BK / VT | (6) 2817 | (6) Auxiliary Driver Seat Adjustment Switch Low Reference | (6) I | (6) — |
| A | — | RD / YE | 5040 | Battery Positive Voltage | I | — |
| B | — | BU / YE | 277 | Driver Seat Recline Motor Rearward Control | I | — |
| C | — | YE / BU | 285 | Driver Seat Horizontal Motor Forward Control | I | — |
| D | — | GY / GN | 284 | Driver Seat Horizontal Motor Rearward Control | I | — |
| E | — | GY / BU | 283 | Driver Seat Rear Vertical Motor Down Control | I | — |
| F | — | GN / BN | 286 | Driver Seat Front Vertical Motor Up Control | I | — |
| G | — | YE | 282 | Driver Seat Rear Vertical Motor Up Control | I | — |
| H | — | GN / YE | 276 | Driver Seat Recline Motor Forward Control | I | — |
| J | — | BK | 1150 | Ground | I | — |
| K | — | BU / VT | 287 | Driver Seat Front Vertical Motor Down Control | I | — |

## S64D Front Seat Adjuster Switch - Driver (A45 / AUN)



3960313

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

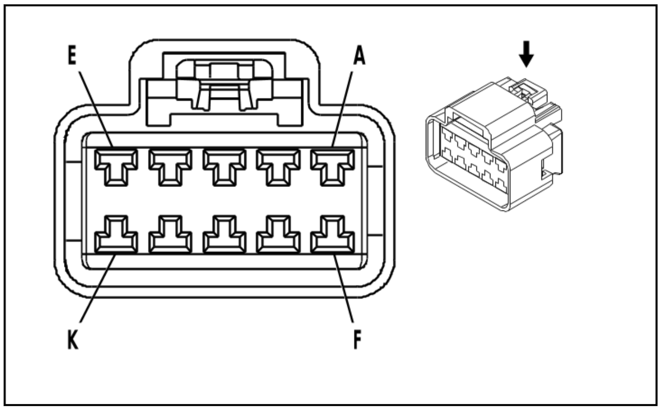
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S64D Front Seat Adjuster Switch - Driver (A45 / AUN)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / BN | (1) 2240 | (1) Battery Positive Voltage | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35<br>(3) 0.5 | (3) GN / GY<br>(3) GN / GY | (3) 3758<br>(3) 3758 | (3) Driver Seat Adjuster Memory Module LIN Bus 2<br>(3) Driver Seat Adjuster Memory Module LIN Bus 2 | (3) I<br>(3) I | (3) ( A45/ AUN) + AVK<br>(3) ( A45/ AUN) - AVK |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1150 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / YE | (5) 2818 | (5) Driver Seat Auxiliary Adjustment Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / VT | (6) 2817 | (6) Auxiliary Driver Seat Adjustment Switch Low Reference | (6) I | (6) — |

### S64P Front Seat Adjuster Switch - Passenger



623046

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35058909
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 280 GT Series( BK)

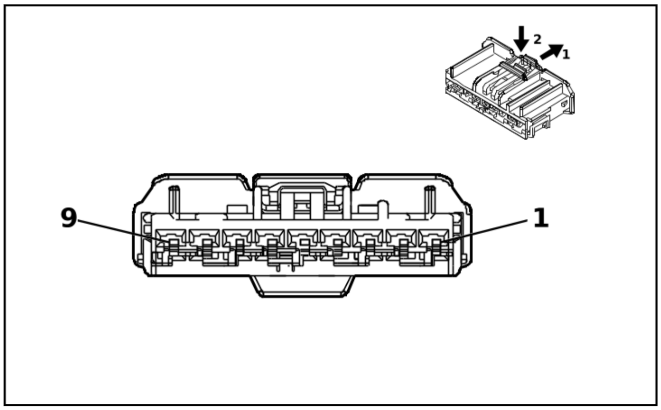
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## S64P Front Seat Adjuster Switch - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 1.5 | BU / WH | 289 | Passenger Seat Rear Vertical Motor Down Control | I | — |
| B | 1.5 | YE / BU | 290 | Passenger Seat Horizontal Motor Rearward Control | I | — |
| C | 1.5 | YE / WH | 296 | Passenger Seat Horizontal Motor Forward Control | I | — |
| D | 1.5 | BU / BN | 77 | Passenger Seat Recline Motor Rearward Control | I | — |
| E | 2.5 | BK | 1250 | Ground | I | — |
| F | 1.5<br>1.5 | BU / WH<br>GN / BU | 289<br>298 | Passenger Seat Rear Vertical Motor Down Control<br>Passenger Seat Front Vertical Motor Down Control | I<br>I | A7J<br>A7K |
| G | 2.5 | RD / YE | 7440 | Battery Positive Voltage | I | — |
| H | 1.5 | GN | 76 | Passenger Seat Recline Motor Forward Control | I | — |
| J | 1.5 | GN / WH | 288 | Passenger Seat Rear Vertical Motor Up Control | I | — |
| K | 1.5<br>1.5 | GN / WH<br>GN / VT | 288<br>297 | Passenger Seat Rear Vertical Motor Up Control<br>Passenger Seat Front Vertical Motor Up Control | I<br>I | A7J<br>A7K |

## S65D Front Seat Lumbar Switch - Driver (AL9)



5204289

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series( GY)

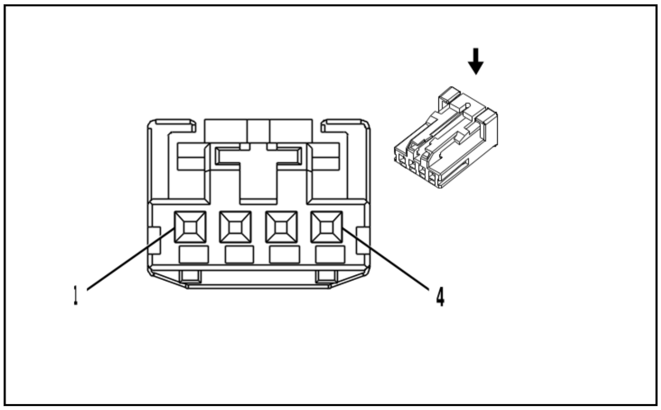
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## S65D Front Seat Lumbar Switch - Driver (AL9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BK | (1) 1150 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 1.5 | (3) RD / YE | (3) 5040 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BU | (5) 611 | (5) Driver Seat Lumbar Support Motor Forward Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) VT | (7) 610 | (7) Driver Seat Lumbar Support Motor Backward Control | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |

### S65D Front Seat Lumbar Switch - Driver (AVK)



2717162

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

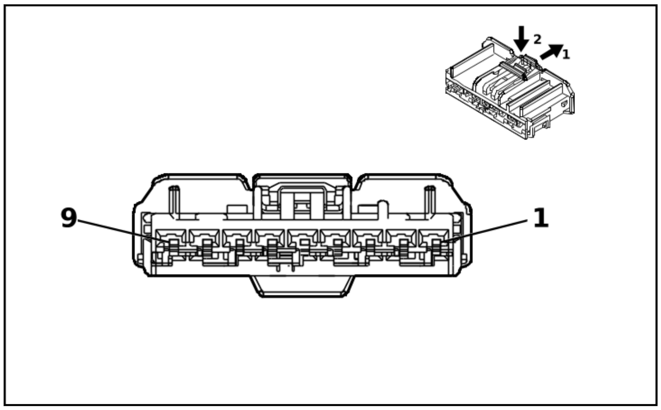
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S65D Front Seat Lumbar Switch - Driver (AVK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 2818 | (3) Driver Seat Auxiliary Adjustment Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / VT | (4) 2817 | (4) Auxiliary Driver Seat Adjustment Switch Low Reference | (4) I | (4) — |

### S65P Front Seat Lumbar Switch - Passenger (AT9)



5204289

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 7289-6875-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 9-Way F 2.8 YESC Series( GY)

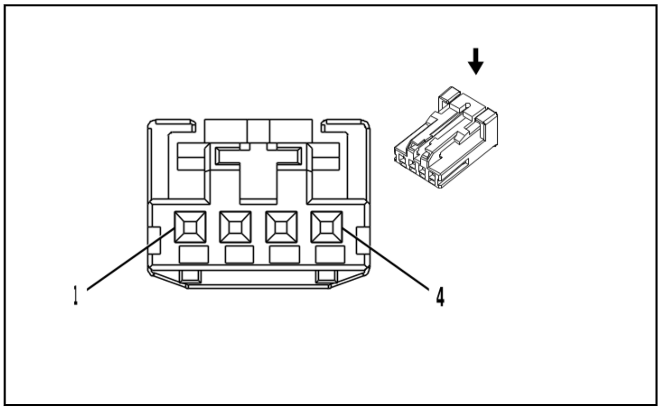
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## S65P Front Seat Lumbar Switch - Passenger (AT9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BK | (1) 1250 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 2.5 | (3) RD / YE | (3) 7440 | (3) Battery Positive Voltage | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.75 | (5) BU | (5) 211 | (5) Passenger Seat Lumbar Support Motor Forward Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) VT | (7) 210 | (7) Passenger Seat Lumbar Support Motor Backward Control | (7) I | (7) — |
| 8 - 9 | — | — | — | Not Occupied | — | — |

### S65P Front Seat Lumbar Switch - Passenger (AVU - AKE)



2717162

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 1-936119-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

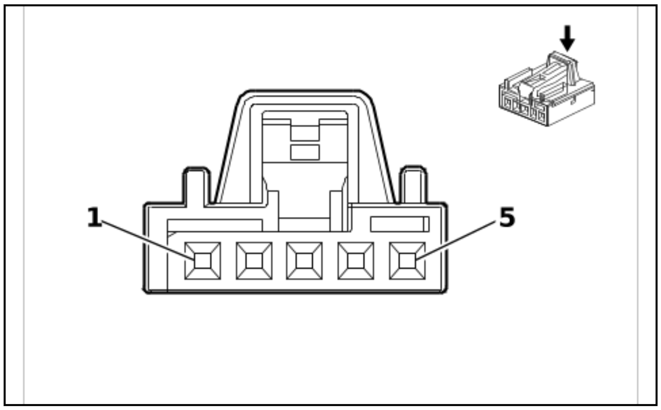
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S65P Front Seat Lumbar Switch - Passenger (AVU - AKE)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) YE / GN | (3) 1068 | (3) Passenger Seat Lumbar Support Switch Analog Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 2194 | (4) Passenger Seat Position Switch Low Reference | (4) I | (4) — |

### S70E Radio Favorites Switch - Steering Wheel



5730934

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 1-1418775-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way F MQS Series( BK)

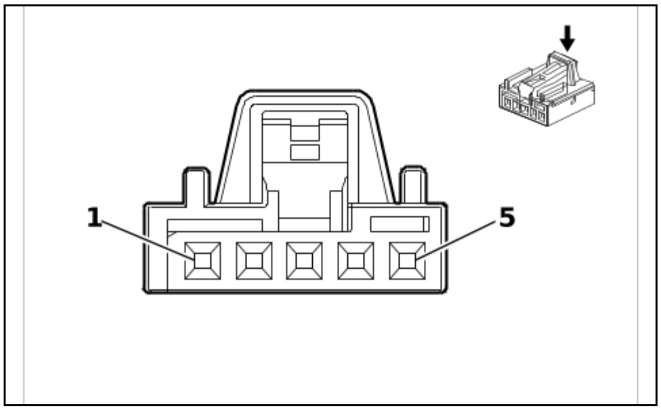
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S70E Radio Favorites Switch - Steering Wheel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / WH | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BU | (2) 4312 | (2) Radio Favorite Back Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH / YE | (3) 4313 | (3) Radio Favorite Forward Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) YE / BU | (4) 6855 | (4) Transmission Tap Down Switch Signal | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |

### S70F Radio Volume Switch - Steering Wheel



5730934

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 1-1418775-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 5-Way F MQS Series( BK)

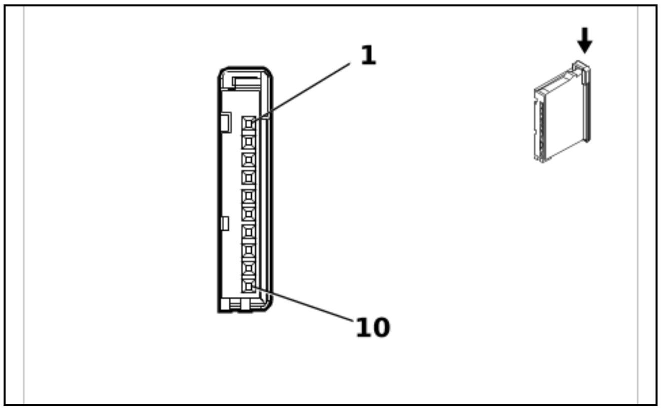
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S70F Radio Volume Switch - Steering Wheel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / WH | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / BN | (2) 4314 | (2) Radio Volume Down Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU | (3) 4315 | (3) Radio Volume Up Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) YE / BU | (4) 6855 | (4) Transmission Tap Down Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) VT / YE | (5) 5526 | (5) Tap Up/Tap Down Switch Signal | (5) I | (5) — |

### S70L Cruise Control Switch



6496613

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 2282268-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.5 MQS Series( BK)

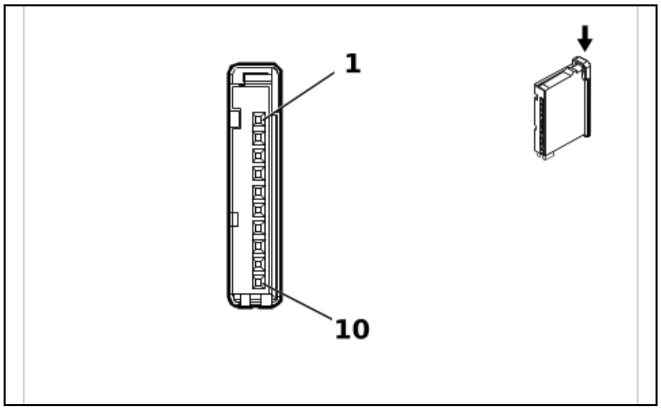
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

## S70L Cruise Control Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) GY / GN | (3) 5737 | (3) Distance Sensing Cruise Control Gap Up/ Down Switch Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) YE / BK | (5) 3893 | (5) Steering Wheel LED Backlight Dimming Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.35 | (7) BN / GN | (7) 1884 | (7) Cruise Control Set/Coast/Resume/Accelerate Switch Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BK / VT | (8) 1449 | (8) Steering Wheel Resistor Ladder Low Reference | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) BK / WH | (10) 6051 | (10) Steering Wheel Ground | (10) I | (10) — |

## S70R Radio Control Switch - Steering Wheel



6496614

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: 2282268-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 0.5 MQS Series( NA)

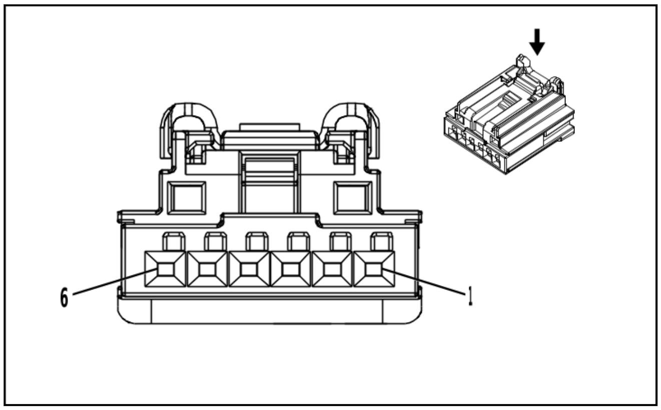
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | EL-35616-58 (BK) | No Tool Required |

### S70R Radio Control Switch - Steering Wheel

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / BN | (2) 4314 | (2) Radio Volume Down Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) WH / YE | (3) 4313 | (3) Radio Favorite Forward Switch Signal | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / BK | (4) 10652 | (4) Radio LIN Bus 1 | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE / BK | (5) 3893 | (5) Steering Wheel LED Backlight Dimming Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / GY | (6) 5883 | (6) Steering Wheel Heating Switch Signal | (6) I | (6) UKL |
| (7) 7 | (7) 0.35 | (7) BN / WH | (7) 5884 | (7) Steering Wheel Heating Switch LED Control | (7) I | (7) UKL |
| (8) 8 | (8) 0.35 | (8) BN / WH | (8) 6051 | (8) Steering Wheel Ground | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU | (9) 4315 | (9) Radio Volume Up Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / BU | (10) 4312 | (10) Radio Favorite Back Switch Signal | (10) I | (10) — |

## S71 Steering Column Tilt Wheel and Telescope Switch (N38)



4145138

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-2
- Service Connector: 19356359
- Description: 6-Way F 0.64 Generation Y Series( BK)

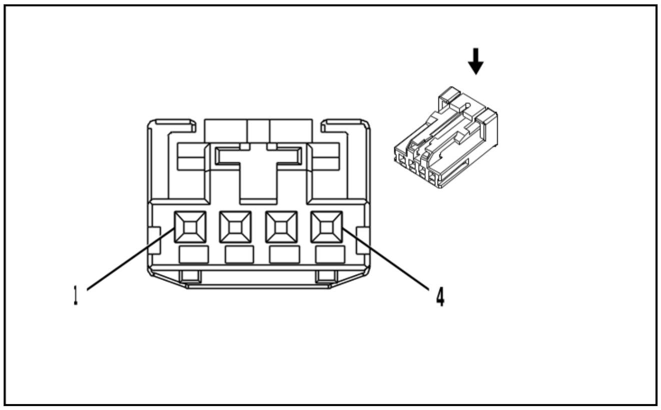
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S71 Steering Column Tilt Wheel and Telescope Switch (N38)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / YE | (1) 2094 | (1) Steering Column Tilt and Telescope Switch Forward Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / BN | (2) 2097 | (2) Steering Column Tilt and Telescope Switch Down Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / GY | (3) 2096 | (3) Steering Column Tilt and Telescope Switch Up Signal | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.35 | (5) GN / BN | (5) 2095 | (5) Steering Column Tilt and Telescope Switch Rearward Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) VT / BK | (6) 2020 | (6) Steering Column Tilt and Telescope Switch Feedback Signal | (6) I | (6) — |

### S76 Trailer Brake Control Switch (JL1)



2717162

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-936119-2
- Service Connector: 84867143
- Description: 4-Way F 0.64 Micro-Quadlock Series( YE)

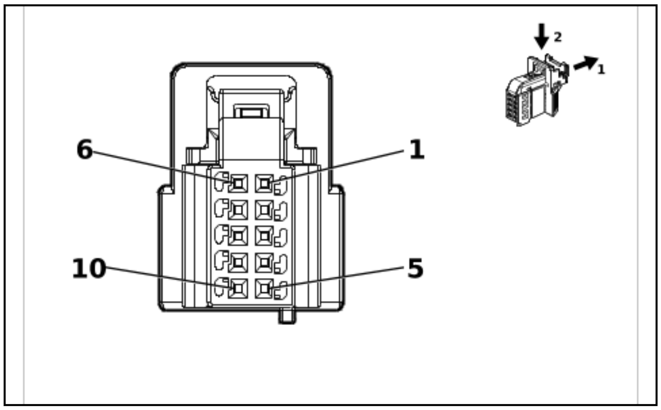
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S76 Trailer Brake Control Switch (JL1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 4040 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BU | (2) 2733 | (2) Brake System Control Module LIN Bus 2 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

## S78 Turn Signal Switch



5838155

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2310000-1
- Service Connector: 13518417
- Description: 10-Way F 0.64 MQS Series( BK)

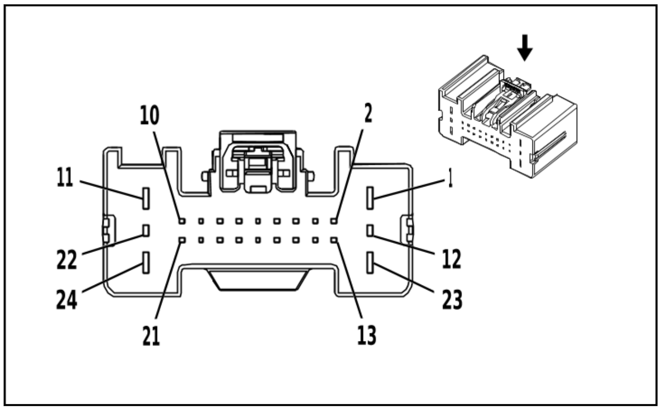
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |

## S78 Turn Signal Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / GN | (1) 2915 | (1) Left Turn Signal Switch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) VT / BU | (2) 2916 | (2) Right Turn Signal Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 1850 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / BU | (4) 391 | (4) Rear Window Wiper Switch Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / BK | (5) 94 | (5) Windshield Washer Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / BN | (6) 307 | (6) Headlamp Switch Flash Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) WH | (7) 524 | (7) High Beam Select Switch High Beam Signal | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) BK / GY | (8) 6009 | (8) Windshield Wiper Switch Low Reference | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) GY | (9) 1715 | (9) Windshield Wiper Switch High Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / BU | (10) 1714 | (10) Windshield Wiper Switch Low Signal | (10) I | (10) — |

### S79D Front Side Door Window Control Switch - Driver X1



2871905

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 7287-3260-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 24-Way F 0.64 GEN-Y, 1.5, 2.8 YESC Series( BK)

## Terminal Part Information

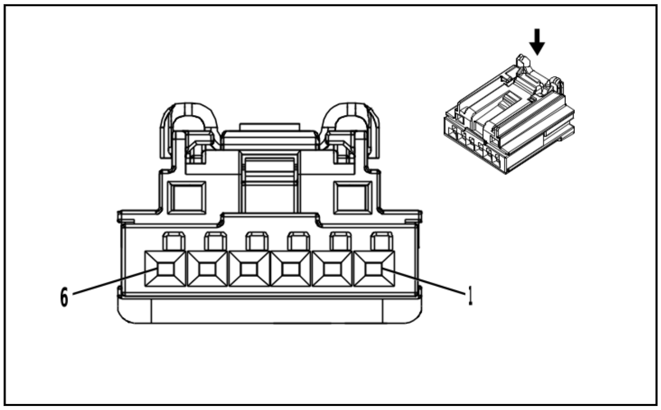
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79D Front Side Door Window Control Switch - Driver X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BN | (1) 2764 | (1) Window Switch Left Front Down Signal | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) GN | (2) 2766 | (2) Power Window Switch Left Front Express Signal | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / YE | (3) 2771 | (3) Left Front Door Lock Switch Lock Signal | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / WH | (4) 2772 | (4) Left Front Door Lock Switch Unlock Signal | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) GY / VT | (5) 2767 | (5) LED Ambient Lighting Control Left Front Door | (5) III | (5) — |
| (6) 6 | (6) 0.35 | (6) VT / YE | (6) 4244 | (6) Left Front Door Lock Indicator Control | (6) III | (6) — |
| (7) 7 | (7) 0.35 | (7) BN / GY | (7) 4784 | (7) Left Front Door LED Backlight Dimming Control | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) GY / YE | (8) 1760 | (8) Left Side Object Detection LED Control | (8) III | (8) — |
| (9) 9 | (9) 0.35 | (9) WH / GN | (9) 2786 | (9) Left Front Mirror Motor Fold In Control | (9) III | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / BN | (10) 2789 | (10) Left Front Mirror Motor Common Control | (10) III | (10) — |
| (11) 11 | (11) 0.5 | (11) BK | (11) 1150 | (11) Ground | (11) II | (11) — |
| (12) 12 | (12) 0.35 | (12) GY / WH | (12) 2785 | (12) Left Front Mirror Motor Fold Out Control | (12) I | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 13 - 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) WH / VT | (17) 4258 | (17) Left Front Door Lock Status Signal | (17) III | (17) — |
| (18) 18 | (18) 0.35 | (18) VT / BU | (18) 2788 | (18) Left Front Mirror Motor Up [+] Down [-] Control | (18) III | (18) — |
| (19) 19 | (19) 0.35 | (19) BN / BK | (19) 2790 | (19) Left Front Mirror Motor Right [+] Left [-] Control | (19) III | (19) — |
| 20 | — | — | — | Not Occupied | — | — |
| (21) 21 | (21) 0.35 | (21) GN / YE | (21) 6134 | (21) Body Control Module LIN Bus 3 | (21) III | (21) — |
| (22) 22 | (22) 0.35 | (22) WH | (22) 606 | (22) Left Outside Rearview Mirror Heater Control | (22) I | (22) — |
| (23) 23 | (23) 0.35 | (23) GY / GN | (23) 2763 | (23) Window Switch Left Front Up Signal | (23) II | (23) — |
| (24) 24 | (24) 0.5 | (24) RD / VT | (24) 1940 | (24) Battery Positive Voltage | (24) II | (24) — |

**S79D Front Side Door Window Control Switch - Driver X2**



4145138

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 2035363-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

## Terminal Part Information

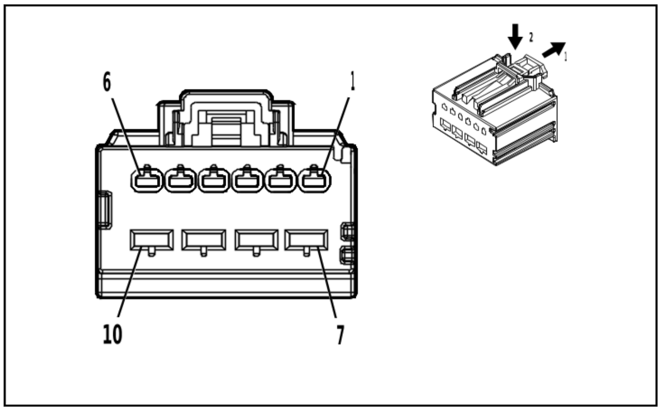
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79D Front Side Door Window Control Switch - Driver X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / YE | (1) 2792 | (1) Left Front Mirror Position Sensor Left [-] Right [+] Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / BN | (2) 2787 | (2) Left Front Mirror Position Sensor Up [+] Down [-] Signal | (2) I | (2) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.35 | (3) VT / RD | (3) 2791 | (3) Left Front Mirror Position Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BK / BN | (4) 673 | (4) Left Outside Rearview Mirror Position Sensor Low Reference | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |

### S79LR Rear Side Door Window Switch - Left



5035058

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

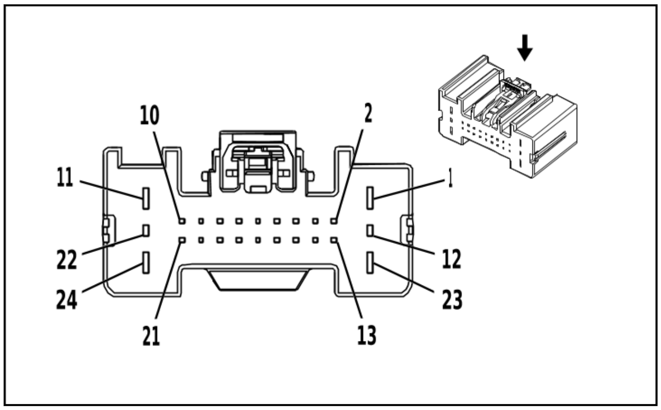
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## S79LR Rear Side Door Window Switch - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / GY | (1) 6135 | (1) Body Control Module LIN Bus 4 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY | (2) 747 | (2) Left Rear Door Ajar Switch Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1150 | (3) Ground | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / BU | (4) 4648 | (4) Left Rear Door Lock Status Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) BK | (7) 1150 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) RD / GY | (8) 3540 | (8) Battery Positive Voltage | (8) II | (8) — |
| (9) 9 | (9) 2 | (9) BU / VT | (9) 668 | (9) Left Rear Window Motor Up Control | (9) II | (9) — |
| (10) 10 | (10) 2 | (10) YE / BU | (10) 669 | (10) Left Rear Window Motor Down Control | (10) II | (10) — |

## S79P Front Side Door Window Switch - Passenger



2871905

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 7287-3260-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 24-Way F 0.64 GEN-Y, 1.5, 2.8 YESC Series( BK)

## Terminal Part Information

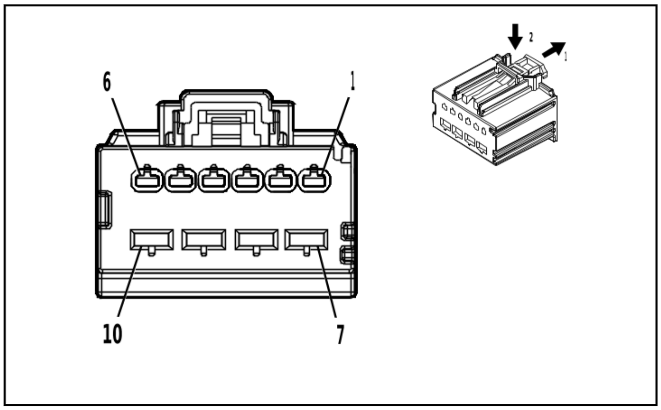
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-64B (L-BU) | No Tool Required |

## S79P Front Side Door Window Switch - Passenger

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1250 | (1) Ground | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) YE / RD | (2) 2799 | (2) Right Front Mirror Position Sensor High Reference | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / BK | (3) 2798 | (3) Right Front Mirror Motor Right [+] Left [-] Control | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) YE / VT | (4) 2796 | (4) Right Front Mirror Motor Up [+] Down [-] Control | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / BN | (5) 2768 | (5) LED Ambient Lighting Control Right Front Door | (5) III | (5) — |
| (6) 6 | (6) 0.35 | (6) YE / BU | (6) 4245 | (6) Right Front Door Lock Indicator Control | (6) III | (6) — |
| (7) 7 | (7) 0.35 | (7) GY / VT | (7) 4638 | (7) LED Backlight Dimming Control Right Front Door | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) GY | (8) 1761 | (8) Right Side Object Detection LED Control | (8) III | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / GY | (9) 2794 | (9) Right Front Mirror Motor Fold In Control | (9) III | (9) — |
| (10) 10 | (10) 0.35 | (10) YE / WH | (10) 2793 | (10) Right Front Mirror Motor Fold Out Control | (10) III | (10) — |
| (11) 11 | (11) 0.35 | (11) GN | (11) 1184 | (11) Window Switch Right Front Up Signal | (11) II | (11) — |
| (12) 12 | (12) 0.35 | (12) BN / VT | (12) 607 | (12) Right Outside Rearview Mirror Heater Control | (12) I | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 13 | — | — | — | Not Occupied | — | — |
| (14) 14 | (14) 0.35 | (14) GN / YE | (14) 6134 | (14) Body Control Module LIN Bus 3 | (14) III | (14) — |
| (15) 15 | (15) 0.35 | (15) VT / WH | (15) 2800 | (15) Right Front Mirror Position Sensor Left [-] Right [+] Signal | (15) III | (15) — |
| (16) 16 | (16) 0.35 | (16) BU / YE | (16) 2795 | (16) Right Front Mirror Position Sensor Up [+] Down [-] Signal | (16) III | (16) — |
| (17) 17 | (17) 0.35 | (17) YE / VT | (17) 2773 | (17) Right Front Door Lock Switch Lock Control | (17) III | (17) — |
| (18) 18 | (18) 0.35 | (18) BN / VT | (18) 2774 | (18) Right Front Door Lock Switch Unlock Control | (18) III | (18) — |
| (19) 19 | (19) 0.35 | (19) VT | (19) 4259 | (19) Right Front Door Lock Status Signal | (19) III | (19) — |
| (20) 20 | (20) 0.35 | (20) VT / GY | (20) 2765 | (20) Window Switch Right Front Express Signal | (20) III | (20) — |
| (21) 21 | (21) 0.35 | (21) WH | (21) 2797 | (21) Right Front Mirror Motor Common Control | (21) III | (21) — |
| (22) 22 | (22) 0.35 | (22) BK / GN | (22) 675 | (22) Right Outside Rearview Mirror Position Sensor Low Reference | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) RD / BU | (23) 5240 | (23) Battery Positive Voltage | (23) II | (23) — |
| (24) 24 | (24) 0.35 | (24) BN | (24) 5295 | (24) Window Switch Right Front Down Signal | (24) II | (24) — |

### S79RR Rear Side Door Window Switch - Right



5035058

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 31372-1600
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 MX Series( BK)

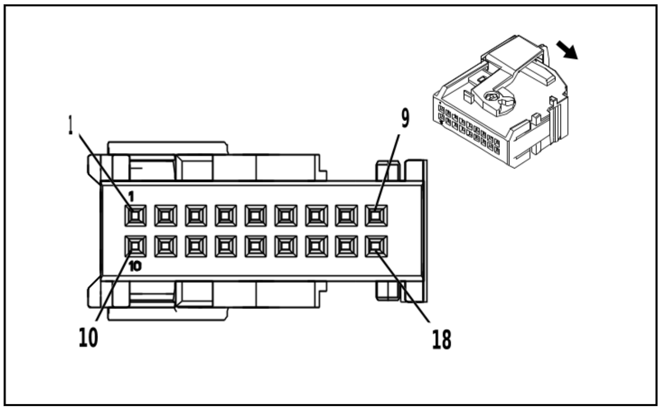
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## S79RR Rear Side Door Window Switch - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GN / GY | (1) 6135 | (1) Body Control Module LIN Bus 4 | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY | (2) 748 | (2) Right Rear Door Ajar Switch Signal | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) WH / GY | (4) 4649 | (4) Right Rear Door Lock Status Signal | (4) I | (4) — |
| 5 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) BK | (7) 1250 | (7) Ground | (7) II | (7) — |
| (8) 8 | (8) 2.5 | (8) RD / BN | (8) 4240 | (8) Battery Positive Voltage | (8) II | (8) — |
| (9) 9 | (9) 2 | (9) BU / GY | (9) 670 | (9) Right Rear Window Motor Up Control | (9) II | (9) — |
| (10) 10 | (10) 2 | (10) GN / BK | (10) 671 | (10) Right Rear Window Motor Down Control | (10) II | (10) — |

### S86 Vehicle Stability Control System Switch



4329088

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 3-2282182-1
- Service Connector: 84976200
- Description: 18-Way F 0.64 Micro-Quadlock Series( BK)

## Terminal Part Information

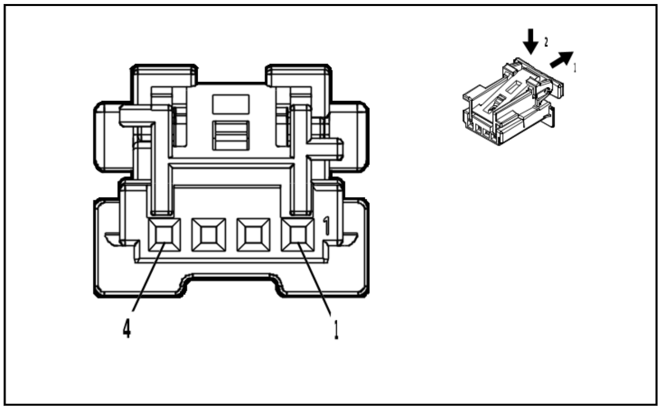
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |

## S86 Vehicle Stability Control System Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / VT | (1) 1788 | (1) Traction Control Switch Signal 1 | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) GY / WH | (4) 3153 | (4) Lane Departure Warning Disable Switch Signal | (4) I | (4) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.35 | (5) WH | (5) 3152 | (5) Lane Departure Warning Indicator Control | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) GY / GN | (6) 2555 | (6) Rear Parking Assist Disable Signal | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) GN / BN | (7) 5852 | (7) Rear Parking Assist Disable LED Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) BU / WH | (8) 3119 | (8) Roof Rail Air Bag Disable Switch Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / YE | (9) 6844 | (9) ABS/Traction Control Hill Descent Control Switch Signal | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BK / WH | (10) 1851 | (10) Signal Ground | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) YE | (11) 6817 | (11) LED Backlight Dimming Control 1 | (11) I | (11) — |
| 12 | — | — | — | Not Occupied | — | — |
| (13) 13 | (13) 0.35 | (13) GY / BU | (13) 3602 | (13) Curb View Enable Signal | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BN / WH | (14) 3895 | (14) Roof Rail Air Bag Disable Switch Low Reference | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) BU / BN | (15) 3161 | (15) Parking Assist Parallel Parking Disable Switch Signal | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |
| (17) 17 | (17) 0.35 | (17) GN | (17) 1110 | (17) Stop/Start Indicator Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU | (18) 1111 | (18) Stop/Start Switch Signal | (18) I | (18) — |

### S91 Parking Brake Control Switch



4997407

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2294218-1
- Service Connector: 19371192
- Description: 4-Way F 0.64 Micro-Quadlock Series( BK)

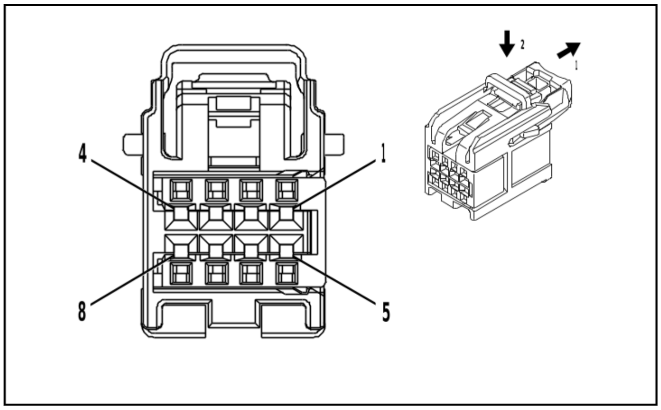
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S91 Parking Brake Control Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / GN | (1) 5140 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / YE | (2) 2731 | (2) Brake System Control Module LIN Bus 1 | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 1851 | (4) Signal Ground | (4) I | (4) — |

### S126 Ride Control Switch



4232228

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 15526973
- Service Connector: 19353873
- Description: 8-Way F 0.64 OCS Series( GY)

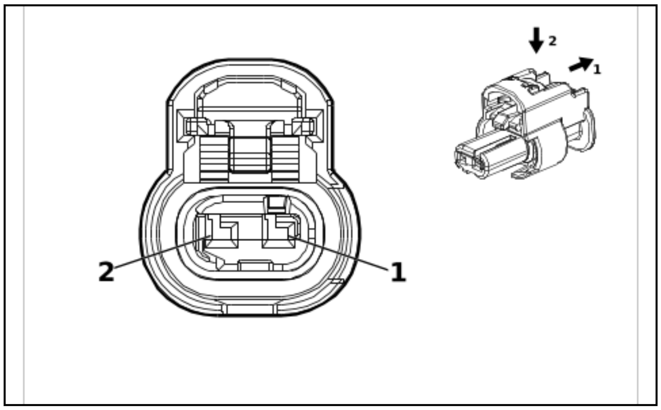
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S126 Ride Control Switch

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) WH / BN | (1) 2203 | (1) Enhanced Driver Mode 2 Switch Signal | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.35 | (3) BK / VT | (3) 1449 | (3) Steering Wheel Resistor Ladder Low Reference | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) YE | (4) 6817 | (4) LED Backlight Dimming Control 1 | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BK | (5) 1850 | (5) Ground | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |

### S141 Liftgate Window Release Switch - Exterior



4649903

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

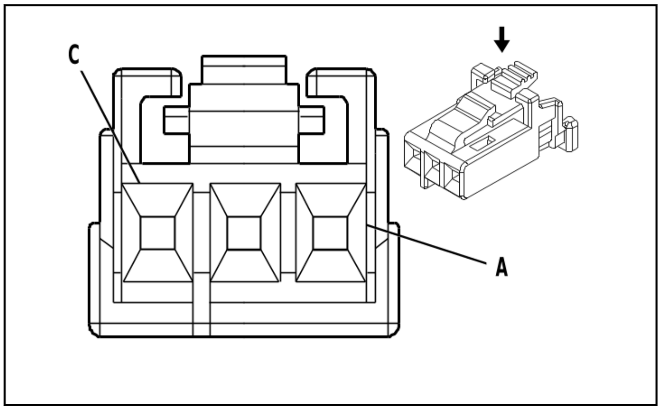
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## S141 Liftgate Window Release Switch - Exterior

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) GY / GN | (1) 6190 | (1) Liftgate Window/Rear Compartment Lid, Exterior Unlatch Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) BK | (2) 2050 | (2) Ground | (2) I | (2) — |

### S143L Rear Seat Back Folding Switch - 2nd Row Left



1376712

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 15417063
- Service Connector: 85823188
- Description: 3-Way F 0.64 Micro-Pack Series( BK)

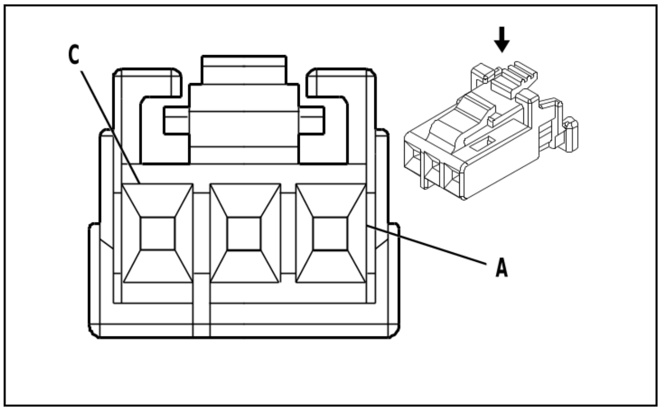
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S143L Rear Seat Back Folding Switch - 2nd Row Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 0.35 | YE / BK | 5813 | Park Enable Control | I | — |
| B | — | — | — | Not Occupied | — | — |
| C | 0.5 | GN | 6808 | Left Rear Folding Seat Motor Control | I | — |

## S143R Rear Seat Back Folding Switch - 2nd Row Right



1376712

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15417063
- Service Connector: 85823188
- Description: 3-Way F 0.64 Micro-Pack Series( BK)

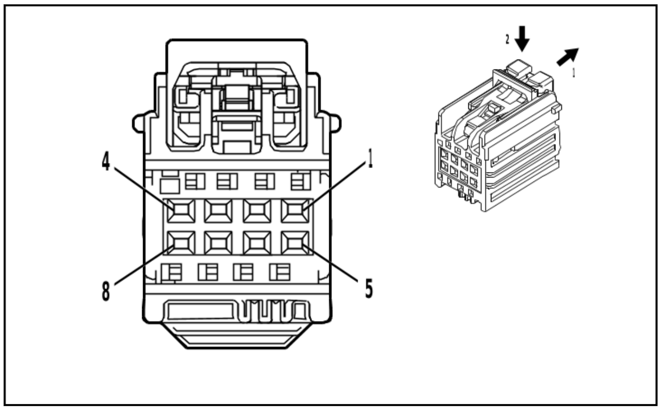
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S143R Rear Seat Back Folding Switch - 2nd Row Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 0.35 | YE / BK | 5813 | Park Enable Control | I | — |
| B | — | — | — | Not Occupied | — | — |
| C | 0.5 | BN / WH | 6809 | Right Rear Folding Seat Motor Control | I | — |

## S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment (ATN / ATT)



4808677

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-2894-30
- Service Connector: 19368548
- Description: 8-Way F 0.64 YESC Series( BK)

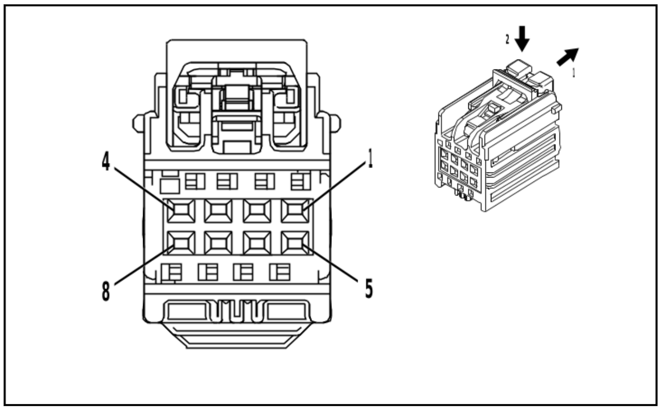
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment (ATN / ATT)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 | — | — | — | Not Occupied | — | — |
| (2) 2 | (2) 0.35 | (2) YE / BK | (2) 5813 | (2) Park Enable Control | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) GN | (4) 6808 | (4) Left Rear Folding Seat Motor Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BN / WH | (5) 6809 | (5) Right Rear Folding Seat Motor Control | (5) I | (5) — |
| 6 - 8 | — | — | — | Not Occupied | — | — |

## S144B 3rd Row Seat Folding Switch - Rear Compartment (AS8)



4280711

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-2895-40
- Service Connector: 19355209
- Description: 8-Way F 0.64 Kaizen Series( GY)

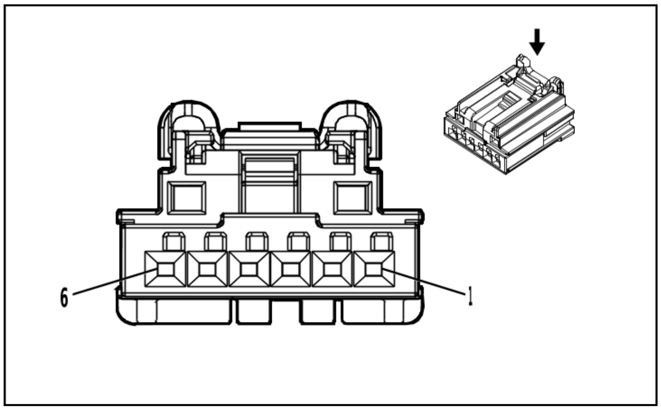
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S144B 3rd Row Seat Folding Switch - Rear Compartment (AS8)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BU | (1) 2698 | (1) Left 3rd Row Seat Recline Switch Signal | (1) I | (1) — |
| 2 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 5474 | (4) 3rd Row Seat Sensor Low Reference | (4) I | (4) — |
| 5 | — | — | — | Not Occupied | — | — |
| (6) 6 | (6) 0.5 | (6) GN / GY | (6) 2699 | (6) Right 3rd Row Seat Recline Switch Signal | (6) I | (6) — |
| 7 - 8 | — | — | — | Not Occupied | — | — |

## S145 Beverage Cooler Switch (DCK)



5020940

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

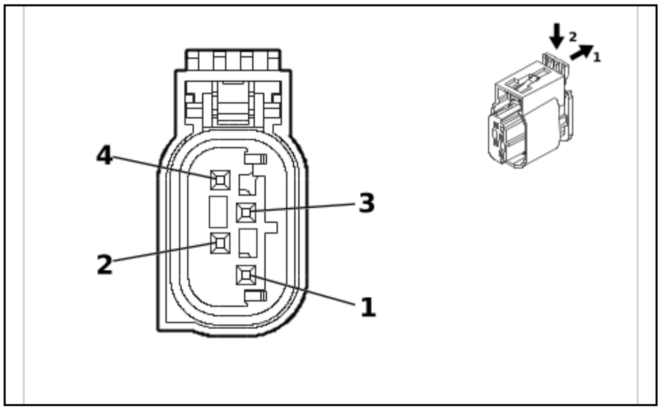
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

### S145 Beverage Cooler Switch (DCK)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 1250 | (1) Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / WH | (3) 7846 | (3) Refrigerator On Indicator Control | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BN / BK | (4) 7844 | (4) Refrigerator Enable Signal | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / GN | (5) 7845 | (5) Refrigerator Freeze Indicator Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

## S194 Emergency Vehicle Warning Rear Lamp Switch (5W4 / 9C1)



5215490

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 13655424
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 0.64 MTS Series, Sealed( BK)

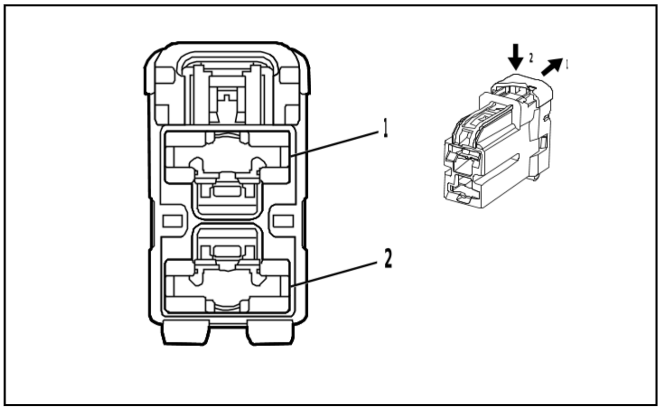
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## S194 Emergency Vehicle Warning Rear Lamp Switch (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 2050 | (1) Ground | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.75 | (3) VT / GN | (3) 8869 | (3) Police Liftgate Strobe Rear On OFF Control | (3) I | (3) — |
| 4 | — | — | — | Not Occupied | — | — |

### T1 DC/AC Converter Control Module X1 (KI4 / KI5)



2453116

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 7283-0724-30
- Service Connector: 85011842
- Description: 2-Way F 9.5 Series( BK)

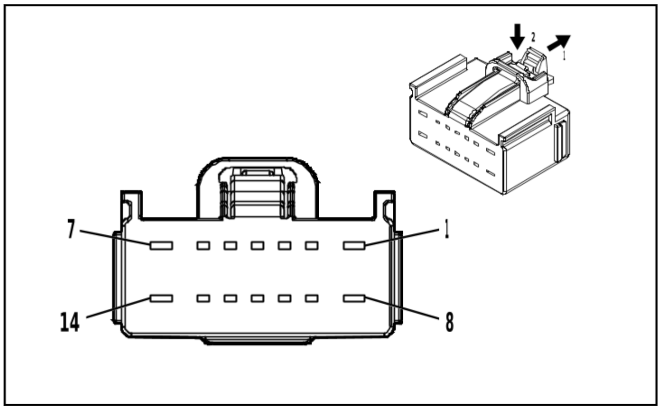
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-22 (RD) | No Tool Required |

## T1 DC/AC Converter Control Module X1 (KI4 / KI5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) BN / BK | (1) 4629 | (1) DC/AC Inverter Control | (1) I | (1) — |
| (2) 2 | (2) 5 | (2) BK | (2) 1450 | (2) Ground | (2) I | (2) — |

### T1 DC/AC Converter Control Module X2 (KI4)



4934172

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7630-30
- Service Connector: 13513604
- Description: 14-Way F 1.5, 2.8 YESC Series( BK)

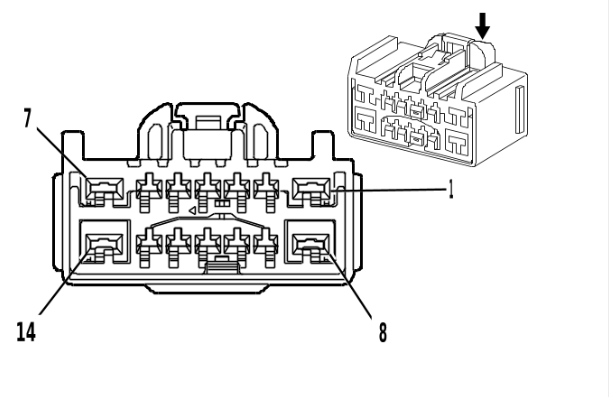
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575850 | J-35616-2A (GY) | J-38125-557 |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |

## T1 DC/AC Converter Control Module X2 (KI4)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) AC Power Outlet Sensor High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 1139 | (3) Run/Crank Ignition 1 Voltage | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) DC/AC Inverter Relay Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BU / BN | (5) 6807 | (5) DC/AC Inverter Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK / WH | (7) 10120 | (7) AC Outlet 2 Phase A Control | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) RD | (8) 10118 | (8) AC Outlet Phase B Control | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) BARE | (9) 10116 | (9) AC Outlet Low Reference | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) GN / BU | (10) 6133 | (10) Body Control Module LIN Bus 2 | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.75 | (12) GN / BN | (12) 2266 | (12) DC/AC Inverter Control 2 | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BARE | (13) 10119 | (13) AC Outlet 2 Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) RD / WH | (14) 10121 | (14) AC Outlet 2 Phase B Control | (14) II | (14) — |

### T1 DC/AC Converter Control Module X2 (KI5)



1540775

**Connector Part Information**

- Harness Type: Body Rear Wiring Harness Extension Harness
- OEM Connector: 7289-7631-90
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way F 1.5, 2.8 YESC Series( BU)

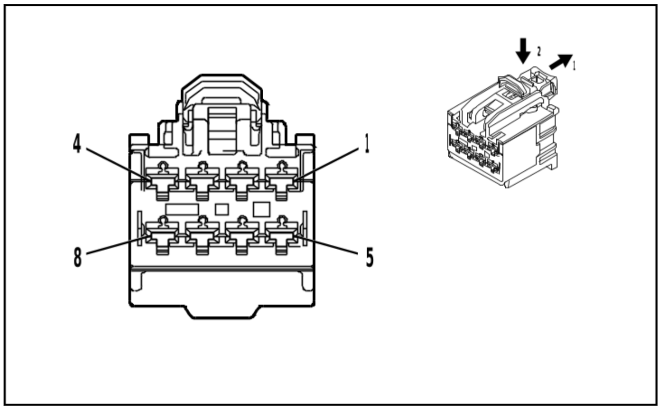
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## T1 DC/AC Converter Control Module X2 (KI5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN | (1) 686 | (1) 230 VAC Outlet Phase A | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) AC Power Outlet Sensor High Reference | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 1139 | (3) Run/Crank Ignition 1 Voltage | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) DC/AC Inverter Relay Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) BU / BN | (5) 6807 | (5) DC/AC Inverter Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BN / WH | (7) 2262 | (7) 230V AC Phase A 2 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) BU | (8) 6865 | (8) 230V AC Phase B | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) BARE | (9) 2526 | (9) 230V AC Outlet Low Reference | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / BU | (10) 6133 | (10) Body Control Module LIN Bus 2 | (10) I | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) 0.5 | (12) GN / BN | (12) 2266 | (12) DC/AC Inverter Control 2 | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BARE | (13) 2544 | (13) 230V AC Outlet 2 Low Reference | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) BU / WH | (14) 2263 | (14) 230V AC Phase B 2 | (14) II | (14) — |

### T3 Audio Amplifier X1 (UQS)



4875738

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33223792
- Service Connector: 19369366
- Description: 8-Way F 2.8 OCS Series( BK)

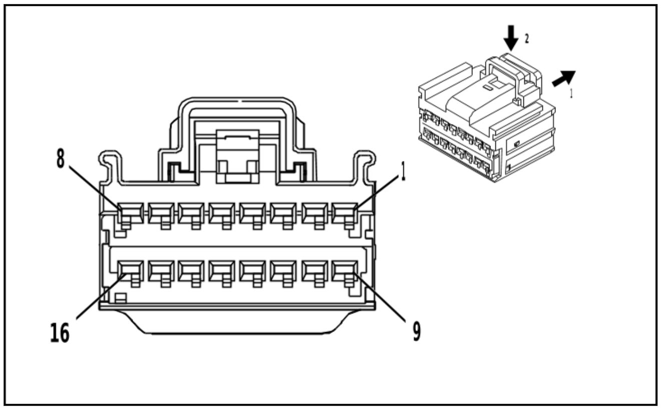
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |

## T3 Audio Amplifier X1 (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BU / GY | (1) 346 | (1) Left/Rear Subwoofer [+] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) YE | (2) 200 | (2) Right Front Speaker 1 [+] Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BU | (3) 201 | (3) Left Front Speaker 1 [+] Control | (3) I | (3) — |
| (4) 4 | (4) 3 | (4) RD / YE | (4) 3740 | (4) Battery Positive Voltage | (4) I | (4) — |
| (5) 5 | (5) 2.5 | (5) GN / BK | (5) 1794 | (5) Left/Rear Subwoofer [-] Control | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) YE / BK | (6) 117 | (6) Right Front Speaker [-] Control 1 | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) BN / BU | (7) 118 | (7) Left Front Speaker [-] Control 1 | (7) I | (7) — |
| (8) 8 | (8) 2.5 | (8) BK / WH | (8) 1451 | (8) Signal Ground | (8) I | (8) — |

### T3 Audio Amplifier X2 (UQS)



4332214

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 15512506
- Service Connector: 13591061
- Description: 16-Way F 1.5 OCS Series( BK)

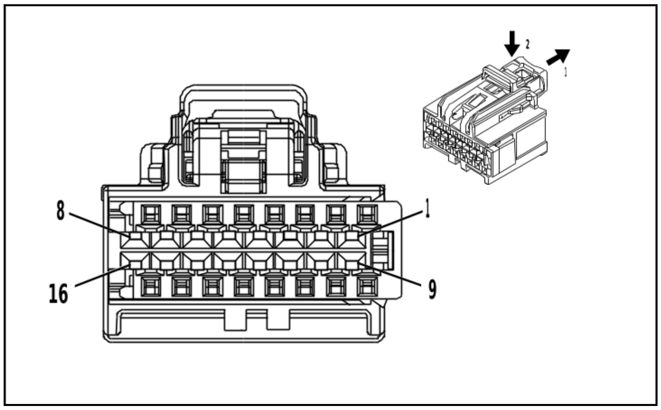
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84757974 | J-35616-2A (GY) | J-38125-215A |

## T3 Audio Amplifier X2 (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) YE / WH | (1) 1860 | (1) Front Center Speaker [+] Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) WH | (2) 46 | (2) Right Rear Speaker [+] Control | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) GN | (3) 199 | (3) Left Rear Speaker [+] Control | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) VT | (4) 8578 | (4) Right Rear D-Pillar Speaker [+] Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) WH / GN | (5) 8576 | (5) Left Rear D-Pillar Speaker [+] Control | (5) I | (5) — |
| (6) 6 | (6) 0.75 | (6) WH / YE | (6) 1853 | (6) Right Front Midrange Speaker [+] Control | (6) I | (6) — |
| (7) 7 | (7) 0.75 | (7) BU / VT | (7) 1857 | (7) Left Front Midrange Speaker [+] Control | (7) I | (7) — |
| 8 | — | — | — | Not Occupied | — | — |
| (9) 9 | (9) 1 | (9) BU / YE | (9) 1960 | (9) Front Center Speaker [-] Control | (9) I | (9) — |
| (10) 10 | (10) 0.75 | (10) BU / BK | (10) 115 | (10) Right Rear Speaker [-] Control | (10) I | (10) — |
| (11) 11 | (11) 0.75 | (11) GN / BK | (11) 116 | (11) Left Rear Speaker [-] Control | (11) I | (11) — |
| (12) 12 | (12) 0.75 | (12) GY / WH | (12) 8577 | (12) Right Rear D-Pillar Speaker [-] Control | (12) I | (12) — |
| (13) 13 | (13) 0.75 | (13) BN / WH | (13) 8575 | (13) Left Rear D-Pillar Speaker [-] Control | (13) I | (13) — |
| (14) 14 | (14) 0.75 | (14) BN / BK | (14) 1953 | (14) Right Front Midrange Speaker [-] Control | (14) I | (14) — |
| (15) 15 | (15) 0.75 | (15) BU / BN | (15) 1957 | (15) Left Front Midrange Speaker [-] Control | (15) I | (15) — |
| 16 | — | — | — | Not Occupied | — | — |

### T3 Audio Amplifier X4 (UQS)



4256181

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35016345
- Service Connector: 13519740
- Description: 16-Way F 0.64 OCS Series( BN)

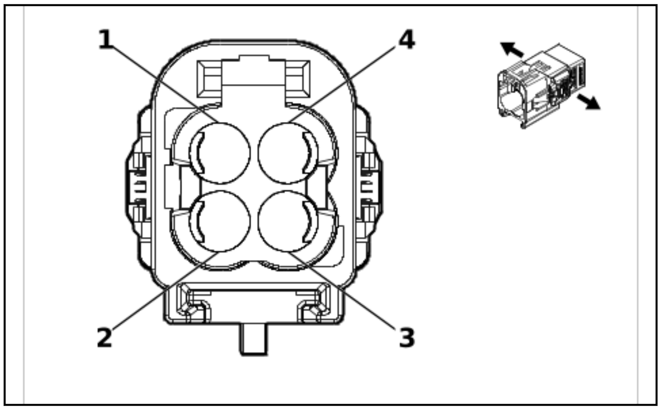
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84619127 | J-35616-64B (L-BU) | J-38125-215A |
| II | Service by Cable | J-35616-64B (L-BU) | J-381225-215A |

## T3 Audio Amplifier X4 (UQS)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 7 | — | — | — | Not Occupied | — | — |
| (8) 8 | (8) 0.5 | (8) BU / YE | (8) 4984 | (8) AUTOSAR CAN Bus [-] 5 Serial Data | (8) I | (8) — |
| 9 | — | — | — | Not Occupied | — | — |
| (10) 10 | (10) 0.35 | (10) WH | (10) 8580 | (10) Automotive Audio Bus A2B Serial Data 1 [+] | (10) II | (10) — |
| (11) 11 | (11) 0.35 | (11) GN | (11) 8579 | (11) Automotive Audio Bus A2B Serial Data 1 [-] | (11) II | (11) — |
| 12 - 15 | — | — | — | Not Occupied | — | — |
| (16) 16 | (16) 0.5 | (16) BU / WH | (16) 4985 | (16) AUTOSAR CAN Bus [+] 5 Serial Data | (16) I | (16) — |

### T4P High Frequency Antenna X1 (- UKL)



6425092

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13520457
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way M Mini Coax Type( BU)

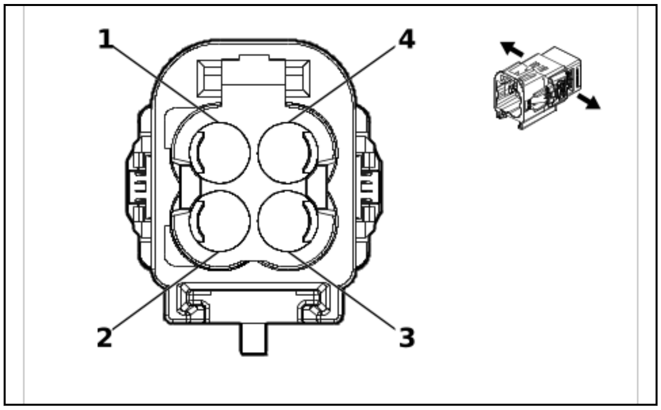
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4P High Frequency Antenna X1 (- UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (1) 1 | (1) 0.5 | (1) Coax Cable | (1) 10314 | (1) Global Navigation Satellite System Antenna Coaxial Signal | (1) I | (1) — |
| (3) 3 | (3) 0.5 | (3) Coax Cable | (3) 10292 | (3) Cell Phone Antenna 2 Coaxial Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) Coax Cable | (4) 6449 | (4) Coaxial Antenna Cell Phone Signal | (4) I | (4) — |

### T4P High Frequency Antenna X1 (UKL)



6002390

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13520459
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way M Mini Coax Type( GN)

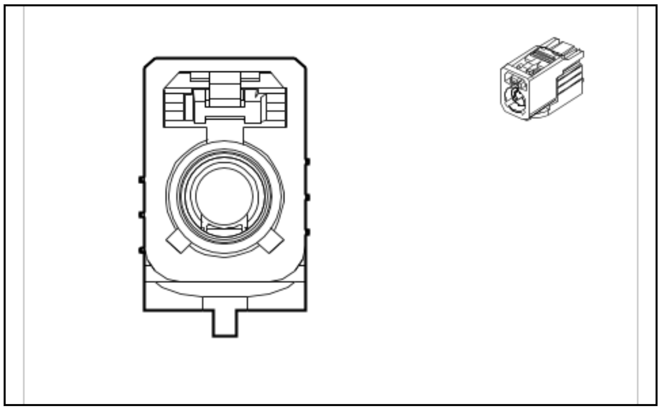
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4P High Frequency Antenna X1 (UKL)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | Not Occupied | — | — |
| (1) 1 | (1) 0.5 | (1) Coax Cable | (1) 10314 | (1) Global Navigation Satellite System Antenna Coaxial Signal | (1) I | (1) — |
| (3) 3 | (3) 0.5 | (3) Coax Cable | (3) 10292 | (3) Cell Phone Antenna 2 Coaxial Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) Coax Cable | (4) 6449 | (4) Coaxial Antenna Cell Phone Signal | (4) I | (4) — |

### T4P High Frequency Antenna X2 (U2K)



5661657

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351022
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( YE)

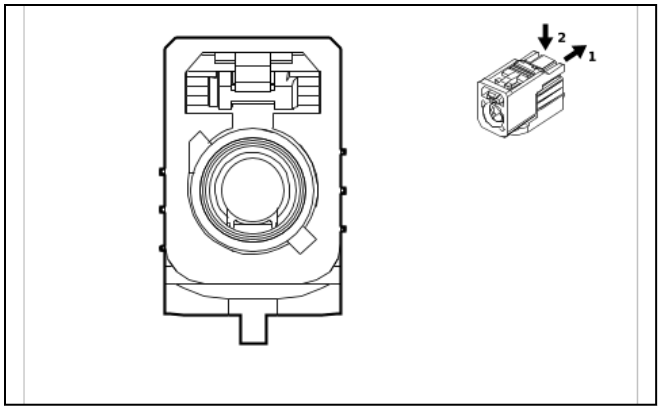
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4P High Frequency Antenna X2 (U2K)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (XM +/-HD) Coaxial Antenna XM Signal | I | — |

### T4TA Auxiliary Wireless Communication Interface Antenna



5518436

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351021
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BG)

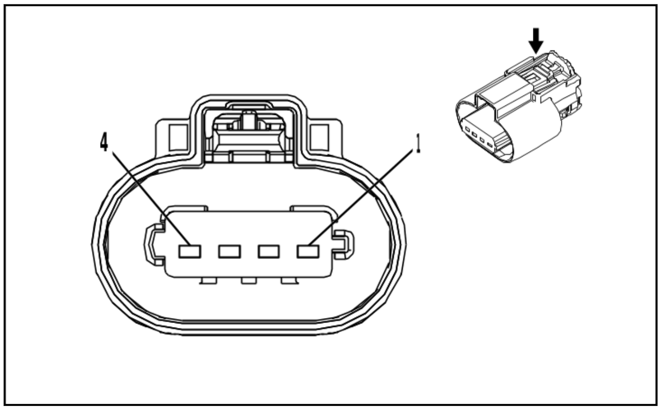
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T4TA Auxiliary Wireless Communication Interface Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | WiFi Antenna Coaxial Signal | I | — |

### T8A Ignition Coil 1



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

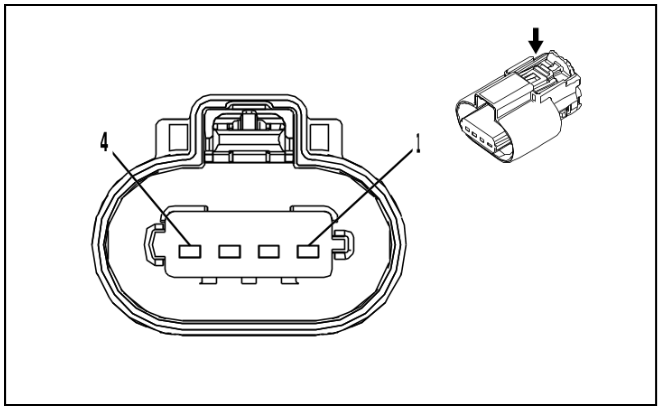
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8A Ignition Coil 1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / VT | (3) 2121 | (3) Ignition Control 1 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

## T8B Ignition Coil 2



3240115

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

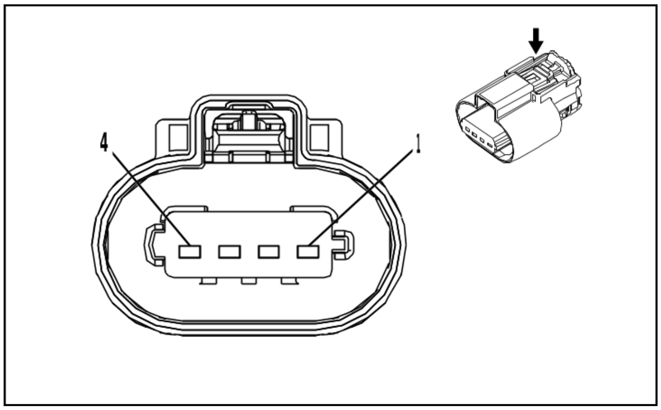
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8B Ignition Coil 2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / WH | (3) 2122 | (3) Ignition Control 2 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

## T8C Ignition Coil 3



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

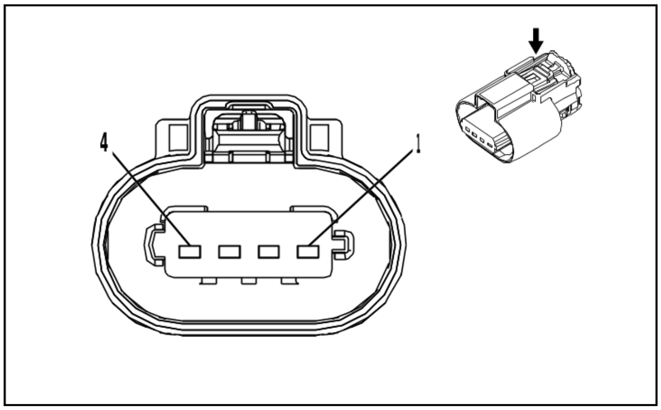
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8C Ignition Coil 3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / BU | (3) 2123 | (3) Ignition Control 3 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

### T8D Ignition Coil 4



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

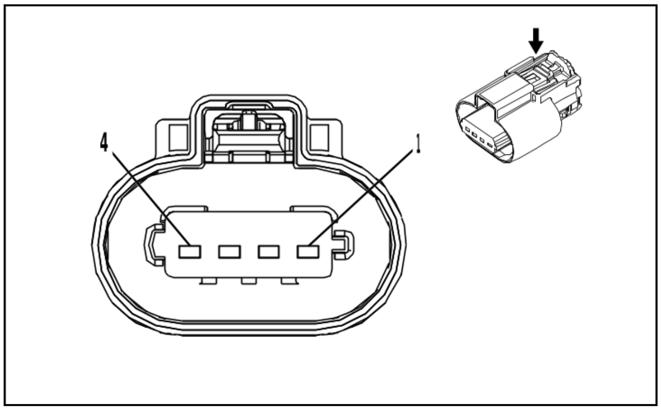
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8D Ignition Coil 4

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / BU | (3) 2124 | (3) Ignition Control 4 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

## T8E Ignition Coil 5



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

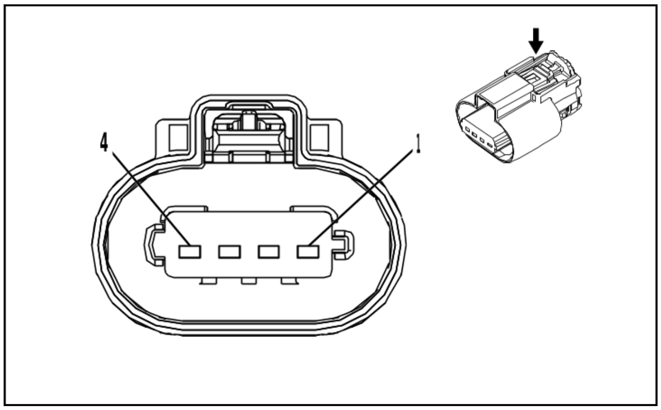
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### T8E Ignition Coil 5

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 2125 | (3) Ignition Control 5 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

## T8F Ignition Coil 6



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

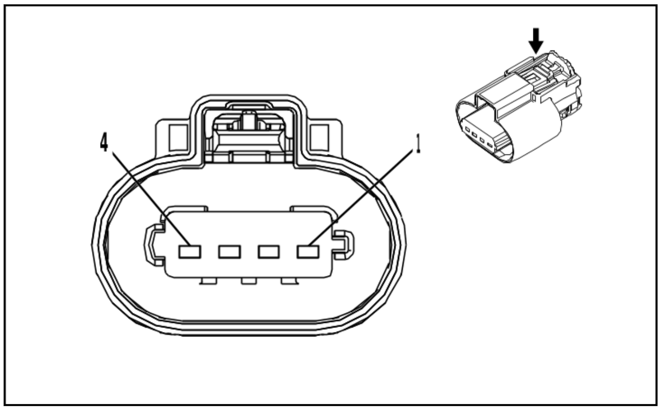
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8F Ignition Coil 6

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / BU | (3) 2126 | (3) Ignition Control 6 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

## T8G Ignition Coil 7



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

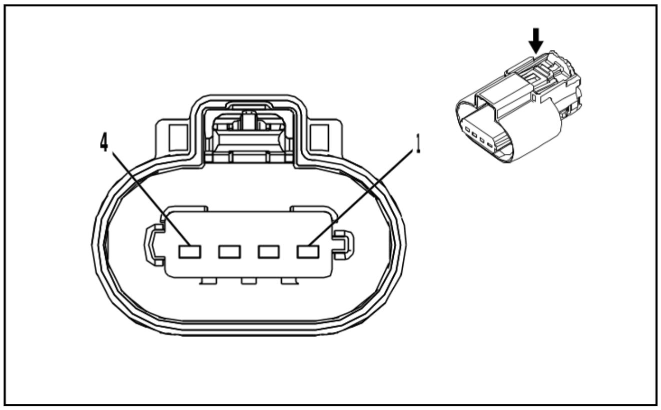
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

## T8G Ignition Coil 7

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6150 | (1) Engine Odd Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / BU | (2) 2129 | (2) Ignition Control Low Reference Bank 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / GY | (3) 2127 | (3) Ignition Control 7 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5291 | (4) Powertrain Main Relay Fused Supply Voltage 2 | (4) I | (4) — |

## T8H Ignition Coil 8



3240115

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34770-0402
- Service Connector: 19367596
- Description: 4-Way F 1.5 MX Series, Sealed( BK)

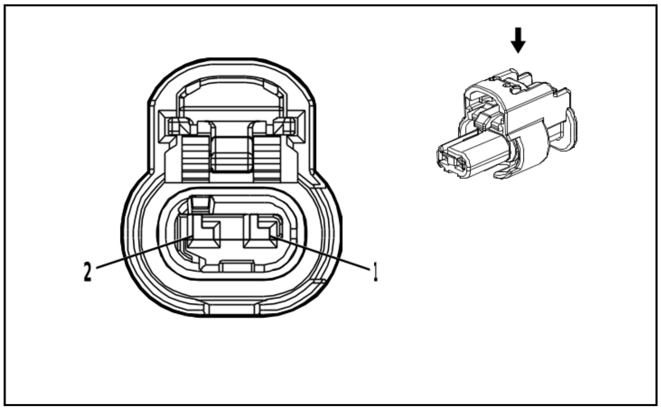
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |

### T8H Ignition Coil 8

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK | (1) 6450 | (1) Engine Even Bank Ground | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / GY | (2) 2130 | (2) Ignition Control Low Reference Bank 2 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 2128 | (3) Ignition Control 8 | (3) I | (3) — |
| (4) 4 | (4) 1 | (4) VT / BU | (4) 5292 | (4) Powertrain Main Relay Fused Supply Voltage 3 | (4) I | (4) — |

### T10E Low Frequency Rear Compartment Antenna



4690744

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

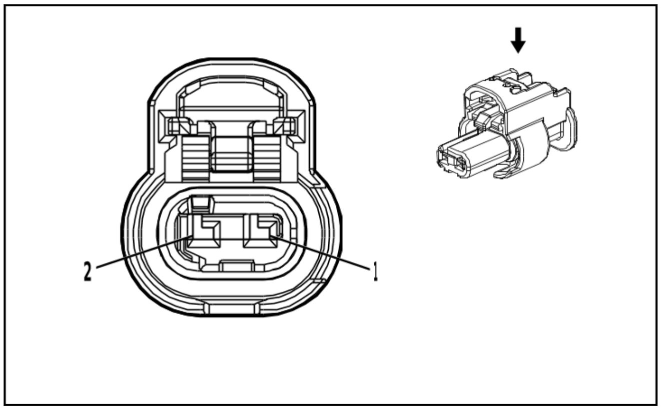
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10E Low Frequency Rear Compartment Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU | (1) 3554 | (1) Interior Passive Entry Antenna 2 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GY / BK | (2) 3555 | (2) Interior Passive Entry Antenna 2 Low Signal | (2) I | (2) — |

### T10G Low Frequency Rear Bumper Antenna



4690744

**Connector Part Information**

- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

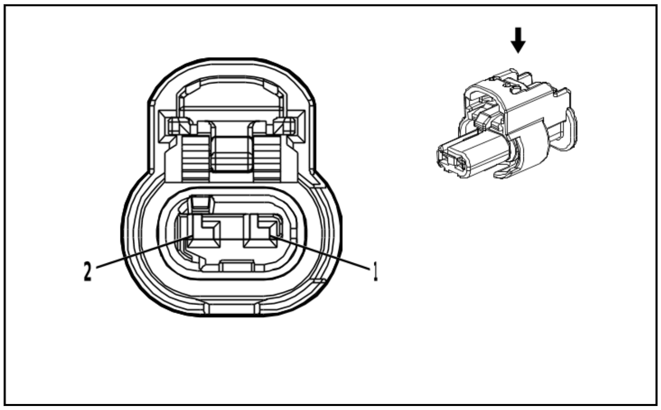
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10G Low Frequency Rear Bumper Antenna

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / GN | (1) 3568 | (1) Rear Closure Passive Entry Antenna High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / GY | (2) 3569 | (2) Rear Closure Passive Entry Antenna Low Signal | (2) I | (2) — |

### T10J Low Frequency Instrument Panel Antenna (5W4 / 9C1)



4690744

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

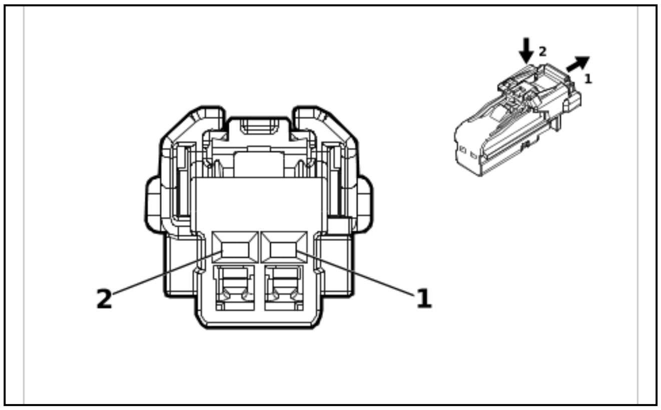
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10J Low Frequency Instrument Panel Antenna (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |

### T10JA Low Frequency Instrument Panel Number 2 Antenna (5W4 / 9C1)



4115691

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

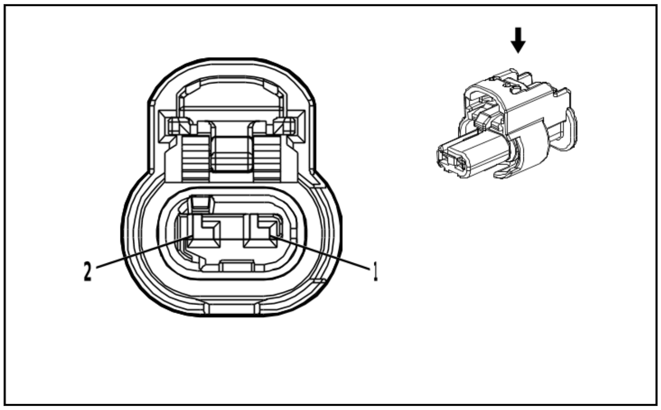
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10JA Low Frequency Instrument Panel Number 2 Antenna (5W4 / 9C1)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 4996 | (1) Immobilizer Antenna Signal [+] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / GY | (2) 4997 | (2) Immobilizer Antenna Low Signal | (2) I | (2) — |

### T10KA Low Frequency Console Number 2 Antenna (- AZ3)



4690744

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

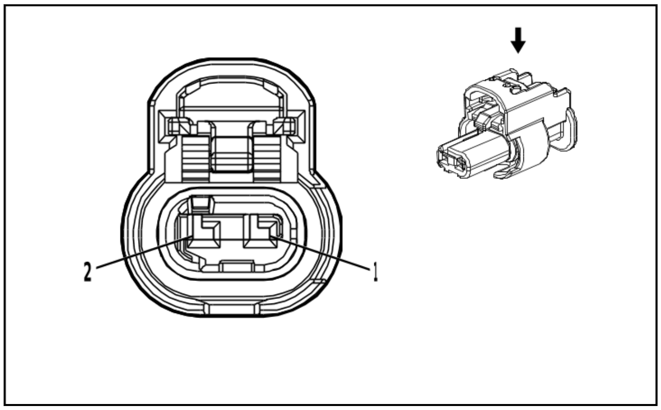
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## T10KA Low Frequency Console Number 2 Antenna (- AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |

### T10KA Low Frequency Console Number 2 Antenna (AZ3)



4690744

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 1-2296694-3
- Service Connector: 19366871
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

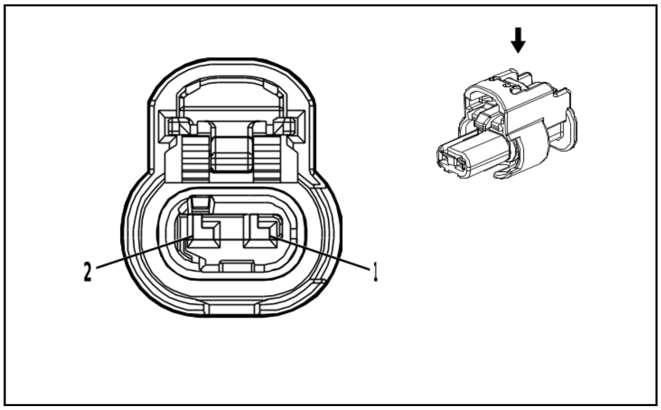
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10KA Low Frequency Console Number 2 Antenna (AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 3552 | (1) Interior Passive Entry Antenna 1 High Signal | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH | (2) 3553 | (2) Interior Passive Entry Antenna 1 Low Signal | (2) I | (2) — |

### T10L Low Frequency Body Side Antenna - Left



4690744

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 1-2296694-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

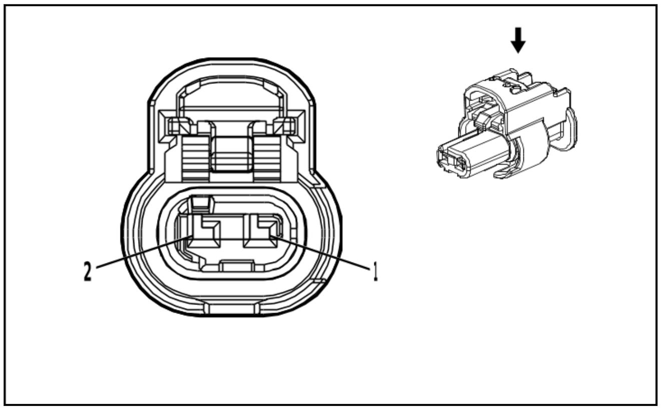
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10L Low Frequency Body Side Antenna - Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 4301 | (1) Passive Entry Left Antenna Signal High | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / GY | (2) 4302 | (2) Passive Entry Left Antenna Signal Low | (2) I | (2) — |

### T10R Low Frequency Body Side Antenna - Right



4690744

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 1-2296694-3
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)

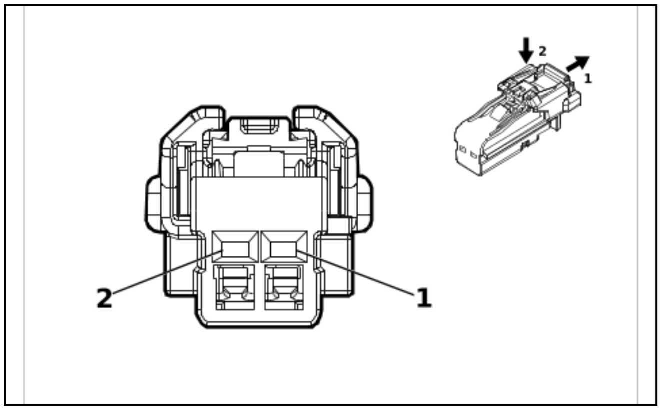
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10R Low Frequency Body Side Antenna - Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 4303 | (1) Passive Entry Right Antenna Signal High | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / BK | (2) 4304 | (2) Passive Entry Right Antenna Signal Low | (2) I | (2) — |

### T10U Low Frequency Console Antenna - Front (- AZ3)



4115691

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

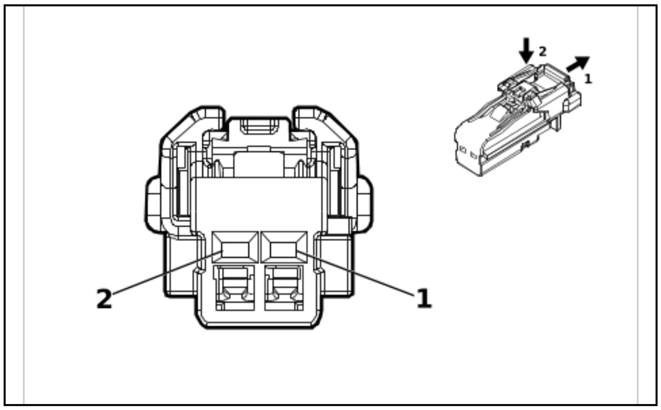
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T10U Low Frequency Console Antenna - Front (- AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BN / BK | (1) 4996 | (1) Immobilizer Antenna Signal [+] | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / GY | (2) 4997 | (2) Immobilizer Antenna Low Signal | (2) I | (2) — |

### T10U Low Frequency Console Antenna - Front (AZ3)



4115691

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8988
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series( BK)

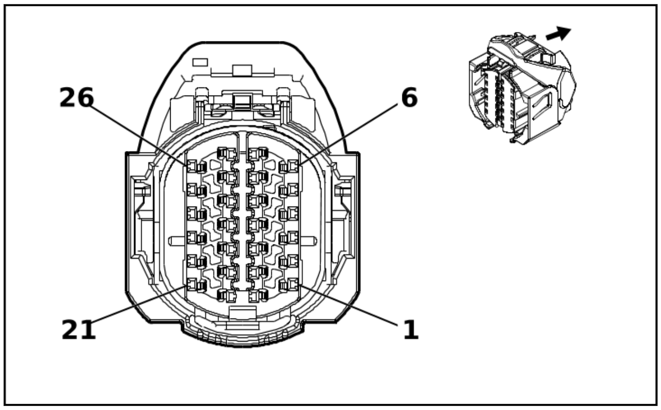
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## T10U Low Frequency Console Antenna - Front (AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / BK | (1) 4996 | (1) Immobilizer Antenna Signal [+] | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / GY | (2) 4997 | (2) Immobilizer Antenna Low Signal | (2) I | (2) — |

### T12 Automatic Transmission X1



5275597

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 2327375-1
- Service Connector: 13528029
- Description: 26-Way F 1.2 MCON Series, Sealed( BK)

## Terminal Part Information

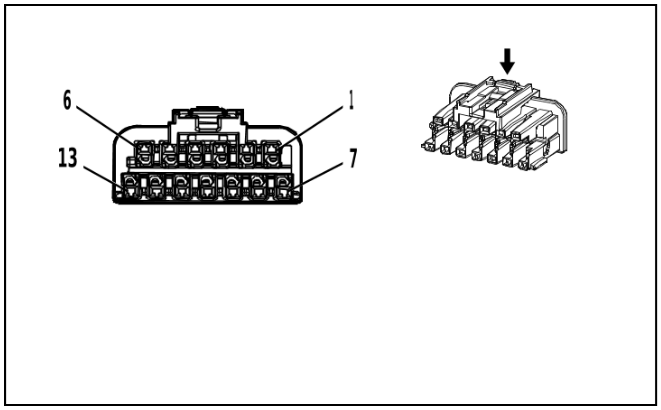
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19331733 | J-35616-12 (BU) | J-38125-553 |

## T12 Automatic Transmission X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / YE | (1) 6353 | (1) Input Speed Signal | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / VT | (2) 4510 | (2) Transmission Intermediate Speed Signal | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BN / BU | (3) 6254 | (3) Transmission Input Speed Sensor Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / BU | (4) 6358 | (4) Output Speed Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 6317 | (5) Electronic Transmission Range Select Out of Park Switch Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) VT / WH | (6) 6319 | (6) Electronic Transmission Range Select Out of Park Switch 2 Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) YE / GN | (7) 4170 | (7) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE / BU | (8) 4171 | (8) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GY / BN | (9) 6388 | (9) Transmission High Side Driver 2 Control | (9) I | (9) — |
| (10) 10 | (10) 0.75 | (10) RD / VT | (10) 7940 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) GN / GY | (11) 6387 | (11) Transmission High Side Driver 1 Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) YE | (12) 2159 | (12) Park Inhibit Solenoid Assembly Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BN / WH | (13) 585 | (13) Transmission Fluid Temperature Sensor Signal | (13) I | (13) — |
| (14) 14 | (14) 0.5 | (14) YE / BN | (14) 6404 | (14) Clutch Solenoid Valve E Control | (14) I | (14) — |
| (15) 15 | (15) 0.5 | (15) GY / GN | (15) 6403 | (15) Clutch Solenoid Valve D Control | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) GY | (16) 6402 | (16) Clutch Solenoid Valve C Control | (16) I | (16) — |
| (17) 17 | (17) 0.75 | (17) BK | (17) 6550 | (17) Ground | (17) I | (17) — |
| (18) 18 | (18) 0.5 | (18) GN | (18) 2968 | (18) Transmission Auxiliary Fluid Pump Control | (18) I | (18) — |
| (19) 19 | (19) 0.5 | (19) GN / BK | (19) 7819 | (19) Default Disable Solenoid Control | (19) I | (19) — |
| (20) 20 | (20) 0.5 | (20) BN | (20) 3706 | (20) Electronic Transmission Range Select Switch Analog Signal 1 | (20) I | (20) — |
| (21) 21 | (21) 0.5 | (21) VT | (21) 4509 | (21) Transmission Clutch F Control | (21) I | (21) — |
| (22) 22 | (22) 0.5 | (22) WH / BU | (22) 4507 | (22) Transmission Clutch H Control | (22) I | (22) — |
| (23) 23 | (23) 0.5 | (23) WH | (23) 4508 | (23) Transmission Clutch G Control | (23) I | (23) — |
| (24) 24 | (24) 0.5 | (24) GN / WH | (24) 1530 | (24) Transmission Line Pressure Control Solenoid Valve Control | (24) I | (24) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (25) 25 | (25) 0.5 | (25) VT / WH | (25) 422 | (25) Torque Converter Clutch Solenoid Valve Control | (25) I | (25) — |
| (26) 26 | (26) 0.5 | (26) BK / BN | (26) 586 | (26) Transmission Fluid Temperature Sensor Low Reference | (26) I | (26) — |

### T12 Automatic Transmission X2



4757907

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series( BN)

## Terminal Part Information

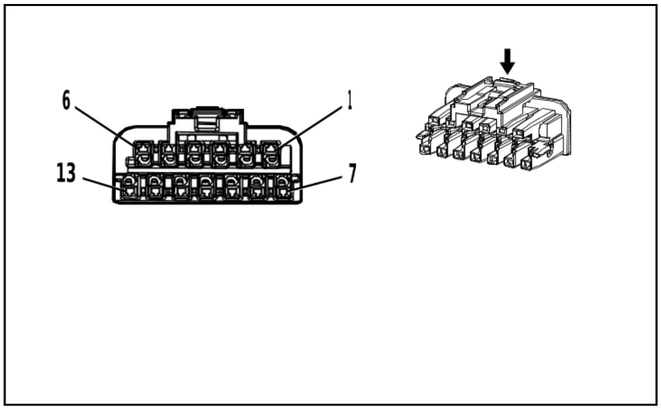
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |

## T12 Automatic Transmission X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / GY | (1) 6319 | (1) Electronic Transmission Range Select Out of Park Switch 2 Signal | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6317 | (2) Electronic Transmission Range Select Out of Park Switch Signal | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / OG | (3) 6358 | (3) Output Speed Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / BU | (4) 6254 | (4) Transmission Input Speed Sensor Signal | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) VT / GN | (5) 4510 | (5) Transmission Intermediate Speed Signal | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / VT | (6) 6353 | (6) Input Speed Signal | (6) I | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / YE | (7) 585 | (7) Transmission Fluid Temperature Sensor Signal | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) OG | (8) 2159 | (8) Park Inhibit Solenoid Assembly Control | (8) I | (8) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) BN | (9) 6387 | (9) Transmission High Side Driver 1 Control | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) GN / VT | (10) 8640 | (10) Battery Positive Voltage | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) WH | (11) 6388 | (11) Transmission High Side Driver 2 Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) BU | (12) 4171 | (12) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) GN | (13) 4170 | (13) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (13) I | (13) — |

### T12 Automatic Transmission X3



4757999

**Connector Part Information**
- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 2203990-2
- Service Connector: Service by Harness - See Part Catalog
- Description: 13-Way F 1.2 MCON Series( BN)

## Terminal Part Information

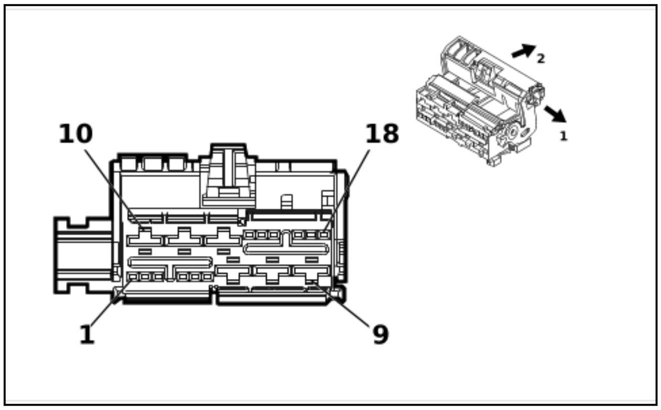
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |

## T12 Automatic Transmission X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BN / WH | (1) 4509 | (1) Transmission Clutch F Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / VT | (2) 4507 | (2) Transmission Clutch H Control | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4508 | (3) Transmission Clutch G Control | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) GN / OG | (4) 1530 | (4) Transmission Line Pressure Control Solenoid Valve Control | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) GY / BN | (5) 422 | (5) Torque Converter Clutch Solenoid Valve Control | (5) I | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / BN | (6) 586 | (6) Transmission Fluid Temperature Sensor Low Reference | (6) I | (6) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) BU / GN | (7) 6404 | (7) Clutch Solenoid Valve E Control | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) GN / BN | (8) 6403 | (8) Clutch Solenoid Valve D Control | (8) I | (8) — |
| (9) 9 | (9) 0.5 | (9) GY | (9) 6402 | (9) Clutch Solenoid Valve C Control | (9) I | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / YE | (10) 6550 | (10) Ground | (10) I | (10) — |
| (11) 11 | (11) 0.5 | (11) GY / OG | (11) 2968 | (11) Transmission Auxiliary Fluid Pump Control | (11) I | (11) — |
| (12) 12 | (12) 0.5 | (12) VT | (12) 7819 | (12) Default Disable Solenoid Control | (12) I | (12) — |
| (13) 13 | (13) 0.5 | (13) BK / GY | (13) 3706 | (13) Electronic Transmission Range Select Switch Analog Signal 1 | (13) I | (13) — |

### T19 Multifunction Power Supply Converter



3825662

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35509388
- Service Connector: 13549243
- Description: 18-Way F 0.64 MTS, 6.3 MCP Series( BK)

## Terminal Part Information

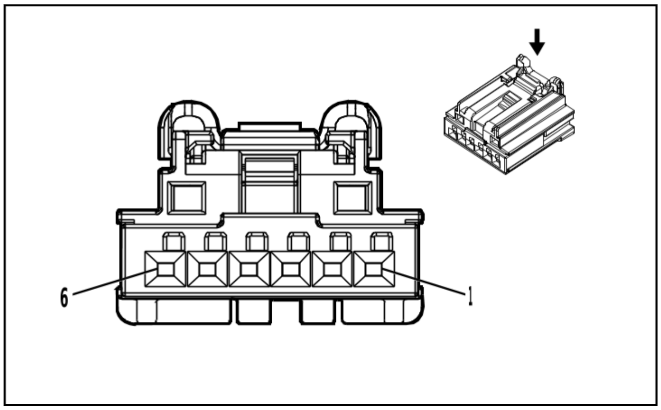
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19300632 | J-35616-64B (L-BU) | J-38125-215A |
| II | 19367600 | J-35616-42 (RD) | J-38125-556 |

## T19 Multifunction Power Supply Converter

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.35 | (4) VT / GN | (4) 4320 | (4) Powertrain Sensor Bus Enable | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) YE / BK | (5) 625 | (5) Starter Enable Relay Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 2.5 | (7) BK | (7) 250 | (7) Ground | (7) II | (7) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (8) 8 | (8) 2.5 | (8) RD / YE | (8) 8140 | (8) Battery Positive Voltage | (8) II | (8) — |
| (9) 9 | (9) 2.5 | (9) RD / GN | (9) 2173 | (9) 12V Regulated Supply Voltage 2 | (9) II | (9) — |
| (10) 10 | (10) 2.5 | (10) RD / YE | (10) 2172 | (10) 12V Regulated Supply Voltage 1 | (10) II | (10) — |
| (11) 11 | (11) 2.5 | (11) RD / WH | (11) 8040 | (11) Battery Positive Voltage | (11) II | (11) — |
| (12) 12 | (12) 2.5 | (12) BK | (12) 250 | (12) Ground | (12) II | (12) — |
| (13) 13 | (13) 0.35 | (13) BU / GY | (13) 4054 | (13) Private Serial Data Powertrain CAN Bus [-] Serial Data | (13) I | (13) — |
| (14) 14 | (14) 0.35 | (14) BU / GY | (14) 4054 | (14) Private Serial Data Powertrain CAN Bus [-] Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) WH | (15) 4055 | (15) Private Serial Data Powertrain CAN Bus [+] Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) WH | (16) 4055 | (16) Private Serial Data Powertrain CAN Bus [+] Serial Data | (16) I | (16) — |
| 17 - 18 | — | — | — | Not Occupied | — | — |

### T22 Wireless Accessory Charging Module (K7A)



5020940

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-6
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

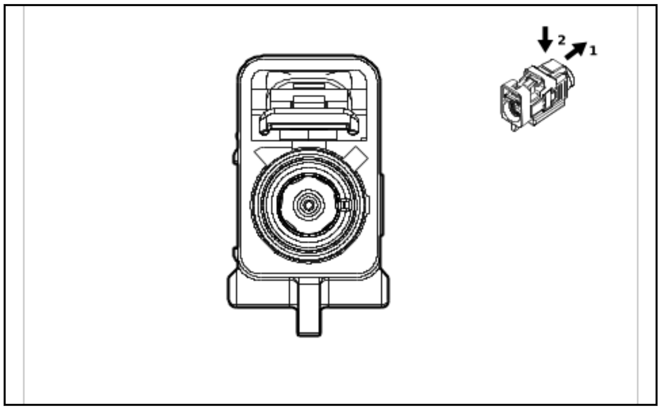
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## T22 Wireless Accessory Charging Module (K7A)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / VT | (1) 6340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / YE | (3) 4984 | (3) AUTOSAR CAN Bus [-] 5 Serial Data | (3) I | (3) — |
| (4) 4 | (4) 0.35 | (4) BU / WH | (4) 4985 | (4) AUTOSAR CAN Bus [+] 5 Serial Data | (4) I | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / YE | (5) 4984 | (5) AUTOSAR CAN Bus [-] 5 Serial Data | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / WH | (6) 4985 | (6) AUTOSAR CAN Bus [+] 5 Serial Data | (6) I | (6) — |

### T35AF Radio Antenna Amplifier - AM/FM X1 (- U2Q)



6186584

**Connector Part Information**
- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 59Z153-C00-A
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T35AF Radio Antenna Amplifier - AM/FM X1 (- U2Q)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (AM/FM) Antenna RF Signal | I | — |

## T35AF Radio Antenna Amplifier - AM/FM X2 (- U2Q)

—

**Connector Part Information**

- Harness Type: Antenna Cable - Rear Spoiler
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: —

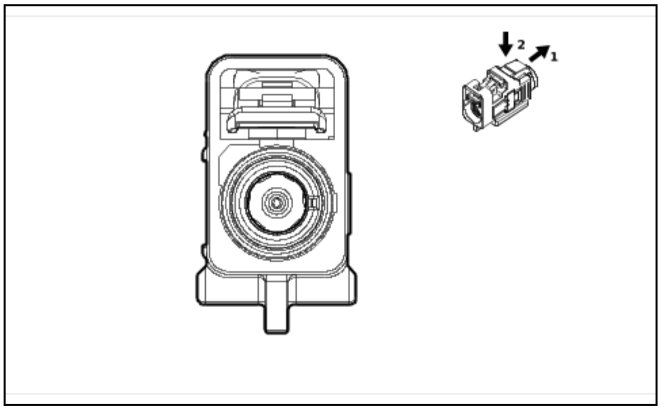
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### T35AF Radio Antenna Amplifier - AM/FM X2 (- U2Q)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 6001 | (1) Coaxial Antenna RF Signal | (1) I | (1) — |

## T35FD Radio Antenna Amplifier - FM2/DAB X1



6186774

**Connector Part Information**

- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 59Z153-C00-E
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( GN)

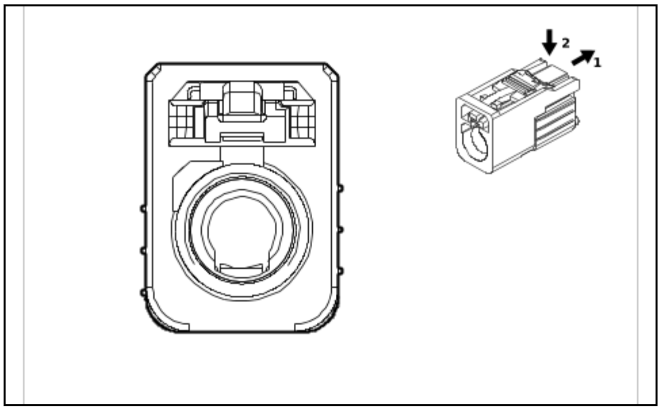
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### T35FD Radio Antenna Amplifier - FM2/DAB X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | (AM/FM) Antenna RF Signal | I | — |

### T35FD Radio Antenna Amplifier - FM2/DAB X2 (U2Q)



5519144

**Connector Part Information**

- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 13516048
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type, Sealed( GN)

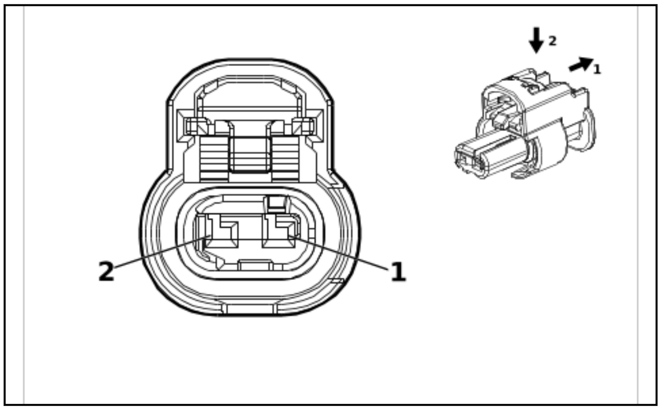
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T35FD Radio Antenna Amplifier - FM2/DAB X2 (U2Q)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| Coax Cable | — | — | — | Not Occupied | — | — |
| GN | 0 | Coax Cable | 3297 | Coaxial Antenna DAB Signal | I | — |

### T35FD Radio Antenna Amplifier - FM2/DAB X3 (U2Q)



4649903

**Connector Part Information**

- Harness Type: Antenna Cable - Rear Spoiler
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 1-Way

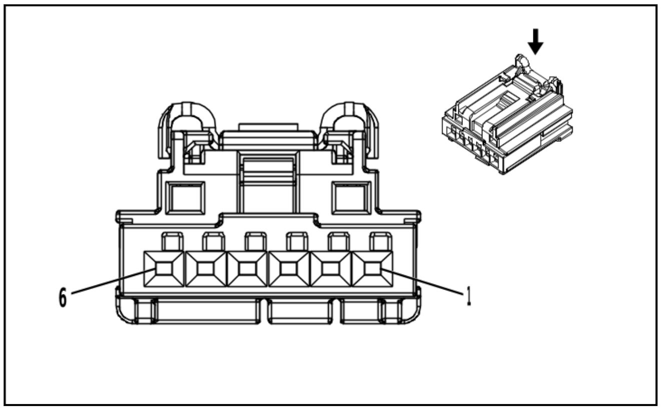
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## T35FD Radio Antenna Amplifier - FM2/DAB X3 (U2Q)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) BK | (1) 6001 | (1) Coaxial Antenna RF Signal | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

### X23 Multimedia Receptacle X1 (- DCH)



3960313

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

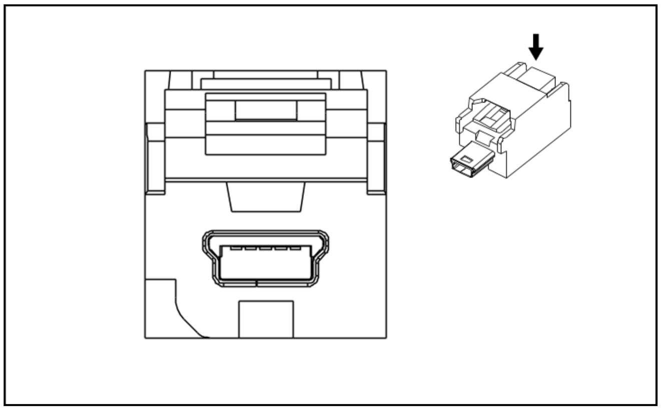
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X23 Multimedia Receptacle X1 (- DCH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.75 | (1) RD / WH<br>(1) RD / WH | (1) 7240<br>(1) 7240 | (1) Battery Positive Voltage<br>(1) Battery Positive Voltage | (1) I<br>(1) I | (1) - UW9<br>(1) UW9 |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.75 | (3) BK / WH | (3) 1451 | (3) Signal Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

## X23 Multimedia Receptacle X2 (- DCH)



3214018

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13868840
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

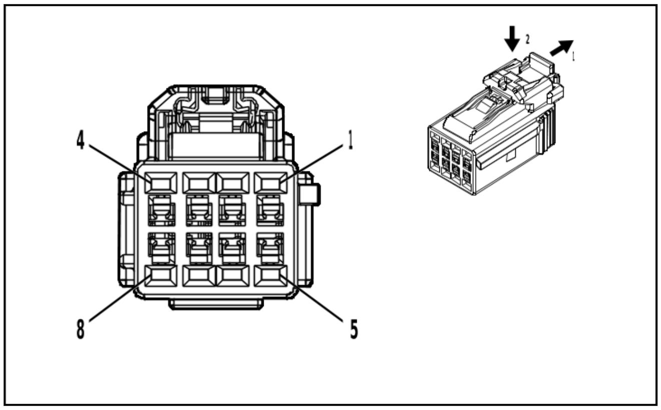
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### X23 Multimedia Receptacle X2 (- DCH)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

## X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4)



5086387

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

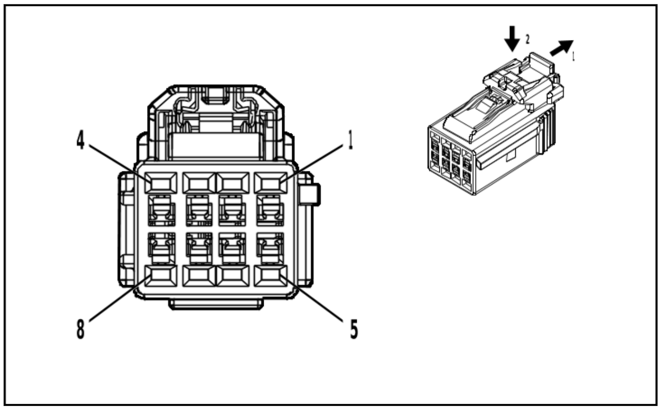
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BK | (7) 1250 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5)



5086387

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

## Terminal Part Information

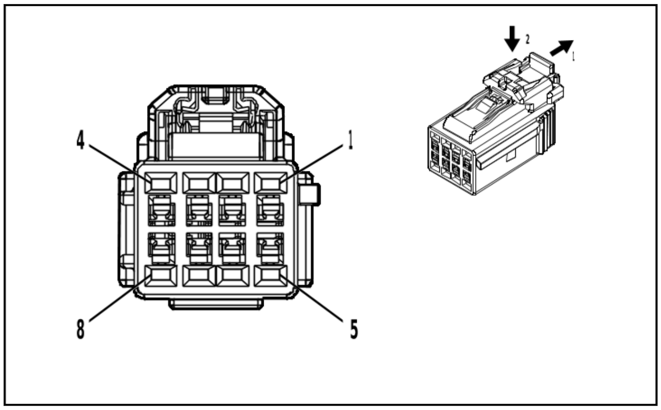
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) AC Outlet Phase A Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) BU / BN | (4) 6807 | (4) DC/AC Inverter Control | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) RD | (5) 10118 | (5) AC Outlet Phase B Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.75 | (7) BK | (7) 1250 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC (KI4)



5086387

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series( BK)

## Terminal Part Information

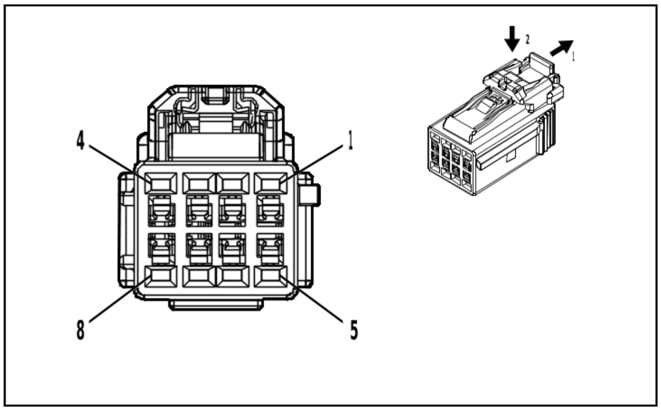
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC (KI4)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 10120 | (1) AC Outlet 2 Phase A Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) GN / BN | (4) 2266 | (4) DC/AC Inverter Control 2 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) RD / WH | (5) 10121 | (5) AC Outlet 2 Phase B Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) BK | (7) 1450 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

### X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC (KI5)



5086387

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series( BK)

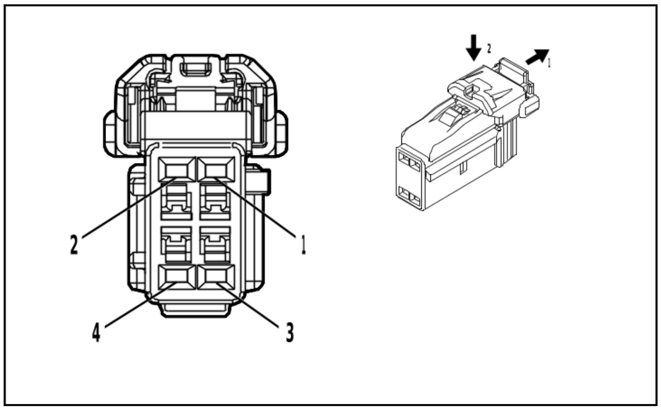
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC (KI5)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 10120 | (1) AC Outlet 2 Phase A Control | (1) I | (1) — |
| 2 | — | — | — | Not Occupied | — | — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) AC Power Outlet Sensor High Reference | (3) I | (3) — |
| (4) 4 | (4) 0.75 | (4) GN / BN | (4) 2266 | (4) DC/AC Inverter Control 2 | (4) I | (4) — |
| (5) 5 | (5) 0.5 | (5) RD / WH | (5) 10121 | (5) AC Outlet 2 Phase B Control | (5) I | (5) — |
| 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 1450 | (7) Ground | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 6817 | (8) LED Backlight Dimming Control 1 | (8) I | (8) — |

## X83B Audio/Video Receptacle X1 (UW9)



4872683

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

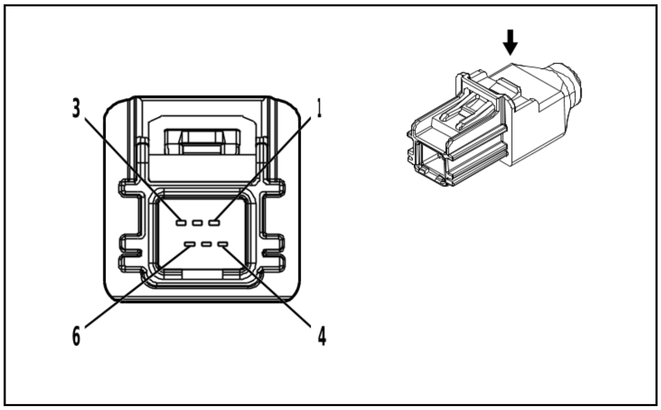
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

### X83B Audio/Video Receptacle X1 (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75<br>(1) 0.75 | (1) RD / WH<br>(1) RD | (1) 7240<br>(1) 7240 | (1) Battery Positive Voltage<br>(1) Battery Positive Voltage | (1) I<br>(1) I | (1) - UBC<br>(1) UBC |
| (2) 2 | (2) 0.75 | (2) BK / WH | (2) 1451 | (2) Signal Ground | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / YE | (3) 7066 | (3) Entertainment Remote Enable Signal | (3) I | (3) — |
| (4) 4 | (4) 0.5 | (4) YE | (4) 6817 | (4) LED Backlight Dimming Control 1 | (4) I | (4) — |

### X83B Audio/Video Receptacle X3 (UW9)



4806625

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 100337-3097
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series( BK)

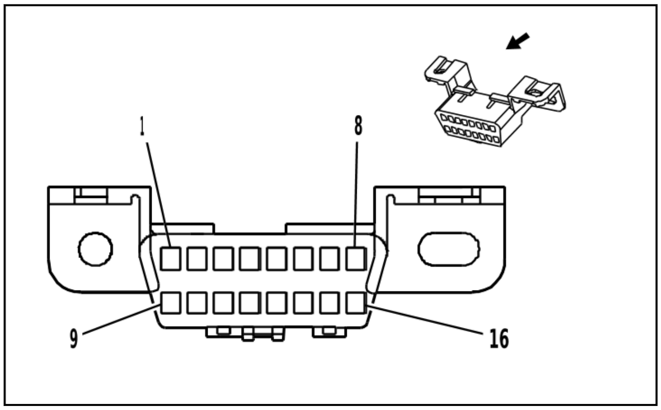
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X83B Audio/Video Receptacle X3 (UW9)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| 1 - 6 | — | — | — | Not Occupied | — | — |
| BK | 0 | — | LVDS | Low Voltage Differential Signaling Cable | I | — |

### X84 Data Link Connector



68793

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 12110250
- Service Connector: 12110250
- Description: 16-Way F 150 Metri-Pack Series( BK)

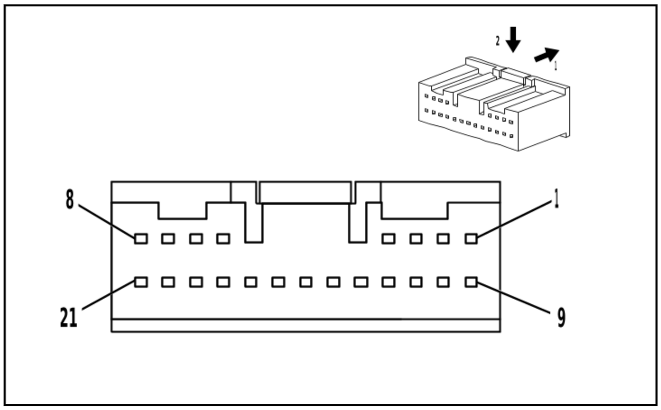
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13580059 | J-35616-14 (GN) | J-38125-12A |
| II | Service by Cable | J-35616-14 (GN) | J-38125-12A |

## X84 Data Link Connector

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BN | (1) 4983 | (1) AUTOSAR CAN Bus [+] 7 Serial Data | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN | (2) 2578 | (2) Private Serial Data Presentation CAN Bus [+] 1 Serial Data | (2) I | (2) — |
| (3) 3 | (3) 0.35 | (3) YE / WH | (3) 4973 | (3) Ethernet Bus 1R [+] | (3) II | (3) — |
| (4) 4 | (4) 1 | (4) BK | (4) 1850 | (4) Ground | (4) I | (4) — |
| (5) 5 | (5) 0.75 | (5) BK / WH | (5) 1851 | (5) Signal Ground | (5) I | (5) — |
| (6) 6 | (6) 0.35 | (6) YE | (6) 4981 | (6) AUTOSAR CAN Bus [+] 6 Serial Data | (6) I | (6) — |
| (7) 7 | (7) 0.35 | (7) VT | (7) 2580 | (7) Private Serial Data Presentation CAN Bus [+] 2 Serial Data | (7) I | (7) — |
| (8) 8 | (8) 0.35 | (8) WH | (8) 7207 | (8) Ethernet Bus 1 Enable Signal | (8) I | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 4982 | (9) AUTOSAR CAN Bus [-] 7 Serial Data | (9) I | (9) — |
| (10) 10 | (10) 0.35 | (10) BN | (10) 2577 | (10) Private Serial Data Presentation CAN Bus [-] 1 Serial Data | (10) I | (10) — |
| (11) 11 | (11) 0.35 | (11) YE | (11) 4972 | (11) Ethernet Bus 1R [-] | (11) II | (11) — |
| (12) 12 | (12) 0.35 | (12) GN / WH | (12) 4975 | (12) Ethernet Bus 1T [+] | (12) II | (12) — |
| (13) 13 | (13) 0.35 | (13) GN | (13) 4974 | (13) Ethernet Bus 1T [-] | (13) II | (13) — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 4980 | (14) AUTOSAR CAN Bus [-] 6 Serial Data | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY | (15) 2579 | (15) Private Serial Data Presentation CAN Bus [-] 2 Serial Data | (15) I | (15) — |
| (16) 16 | (16) 0.5 | (16) RD / YE | (16) 6540 | (16) Battery Positive Voltage | (16) I | (16) — |

## X85 Steering Wheel Airbag Coil X1



3960237

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: 13510218
- Description: 21-Way F 0.64 Series( YE)

## Terminal Part Information

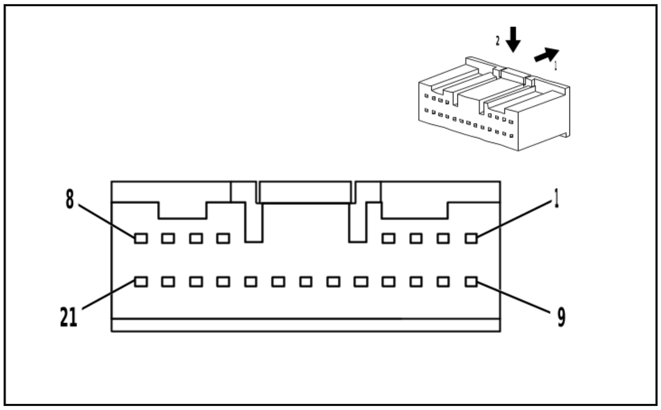
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575742 | J-35616-64B (L-BU) | J-38125-215A |
| II | 13575865 | J-35616-64B (L-BU) | J-38125-215A |

## X85 Steering Wheel Airbag Coil X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 1851 | (1) Signal Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 3287 | (2) Horn Switch Signal | (2) I | (2) — |
| 3 - 4 | — | — | — | Not Occupied | — | — |
| (5) 5 | (5) 0.5 | (5) OG / GN | (5) 3023 | (5) Steering Wheel Air Bag Stage 2 High Control | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) WH / OG | (6) 3022 | (6) Steering Wheel Air Bag Stage 2 Low Control | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) BN / OG | (7) 3020 | (7) Steering Wheel Air Bag Stage 1 Low Control | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) OG / VT | (8) 3021 | (8) Steering Wheel Air Bag Stage 1 High Control | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) GN / BK | (9) 10652 | (9) Radio LIN Bus 1 | (9) I | (9) — |
| (10) 10 | (10) 0.35<br>(10) 0.35 | (10) GN / BK<br>(10) GN / GY | (10) 2858<br>(10) 11023 | (10) Body Control Module LIN Bus 12<br>(10) Image Processing Module LIN Bus 1 | (10) I<br>(10) I | (10) KI3- UKL<br>(10) UKL |
| (11) 11 | (11) 0.35 | (11) GY / GN | (11) 11874 | (11) Cruise Control Bank 1 Switch Signal | (11) I | (11) — |
| (12) 12 | (12) 0.35 | (12) BK / VT | (12) 1449 | (12) Steering Wheel Resistor Ladder Low Reference | (12) I | (12) — |

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.35 | (13) WH / VT | (13) 2246 | (13) Driver Illumination Lamp 1 Control | (13) I | (13) — |
| (14) 14 | (14) 0.75 | (14) RD / GN | (14) 5140 | (14) Battery Positive Voltage | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) BN / GN | (15) 11875 | (15) Cruise Control Bank 2 Switch Signal | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) VT / YE | (16) 5526 | (16) Tap Up/Tap Down Switch Signal | (16) I | (16) — |
| (17) 17 | (17) 0.35 | (17) YE / BU | (17) 2245 | (17) Driver Illumination Lamp 2 Control | (17) I | (17) — |
| (18) 18 | (18) 0.35 | (18) BU / BN | (18) 7744 | (18) Driver Illumination Lamp Ground | (18) I | (18) — |
| 19 | — | — | — | Not Occupied | — | — |
| (20) 20 | (20) 0.75 | (20) BK | (20) 1850 | (20) Ground | (20) I | (20) — |
| (21) 21 | (21) 0.35 | (21) RD / BN | (21) 10040 | (21) Battery Positive Voltage | (21) I | (21) — |

### X85 Steering Wheel Airbag Coil X2



3960237

**Connector Part Information**

- Harness Type: Steering Wheel Horn Switch Wiring Harness
- OEM Connector: ATLCPB-21B-2AY
- Service Connector: Service by Harness - See Part Catalog
- Description: 21-Way F 0.64 Series( YE)

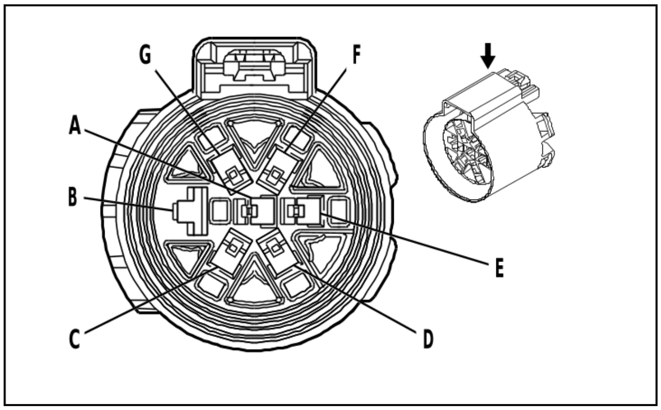
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X85 Steering Wheel Airbag Coil X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK / WH | (1) 6051 | (1) Steering Wheel Ground | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 3287 | (2) Horn Switch Signal | (2) I | (2) — |
| 3 - 6 | — | — | — | Not Occupied | — | — |
| (7) 7 | (7) 0.5 | (7) BN / OG | (7) 3020 | (7) Steering Wheel Air Bag Stage 1 Low Control | (7) I | (7) — |
| (8) 8 | (8) 0.5 | (8) OG / VT | (8) 3021 | (8) Steering Wheel Air Bag Stage 1 High Control | (8) I | (8) — |
| (9) 9 | (9) —<br>(9) — | (9) RD / BU<br>(9) RD / BU | (9) 10040<br>(9) 6040 | (9) Battery Positive Voltage<br>(9) Battery Positive Voltage | (9) II<br>(9) II | (9) KI3+ UKL<br>(9) KI3- UKL |
| (10) 10 | (10) — | (10) BK | (10) 6050 | (10) Steering Wheel Ground | (10) II | (10) — |
| 11 | — | — | — | Not Occupied | — | — |
| (12) 12 | (12) — | (12) BU / BN | (12) 7744 | (12) Driver Illumination Lamp Ground | (12) II | (12) — |
| (13) 13 | (13) — | (13) YE / BU | (13) 2245 | (13) Driver Illumination Lamp 2 Control | (13) II | (13) — |
| (14) 14 | (14) 0.35 | (14) VT / YE | (14) 5526 | (14) Tap Up/Tap Down Switch Signal | (14) I | (14) — |
| (15) 15 | (15) 0.35 | (15) GY / GN | (15) 5737 | (15) Distance Sensing Cruise Control Gap Up/Down Switch Signal | (15) I | (15) — |
| (16) 16 | (16) 0.35 | (16) RD / GN | (16) 5140 | (16) Battery Positive Voltage | (16) I | (16) — |
| (17) 17 | (17) — | (17) WH / VT | (17) 2246 | (17) Driver Illumination Lamp 1 Control | (17) II | (17) — |
| (18) 18 | (18) 0.35 | (18) BK / VT | (18) 1449 | (18) Steering Wheel Resistor Ladder Low Reference | (18) I | (18) — |
| (19) 19 | (19) 0.35 | (19) BN / GN | (19) 1884 | (19) Cruise Control Set/Coast/Resume/Accelerate Switch Signal | (19) I | (19) — |
| (20) 20 | (20) —<br>(20) — | (20) GN / BK<br>(20) GN / BK | (20) 2858<br>(20) 11023 | (20) Body Control Module LIN Bus 12<br>(20) Image Processing Module LIN Bus 1 | (20) II<br>(20) II | (20) KI3- UKL<br>(20) UKL |
| (21) 21 | (21) 0.35 | (21) GN / BK | (21) 10652 | (21) Radio LIN Bus 1 | (21) I | (21) UKL |

### X88B Tow Vehicle Electrical Receptacle X1



2056936

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13857223
- Service Connector: 86816072
- Description: 7-Way F 280, 630 Metri-Pack Series, Sealed( BK)

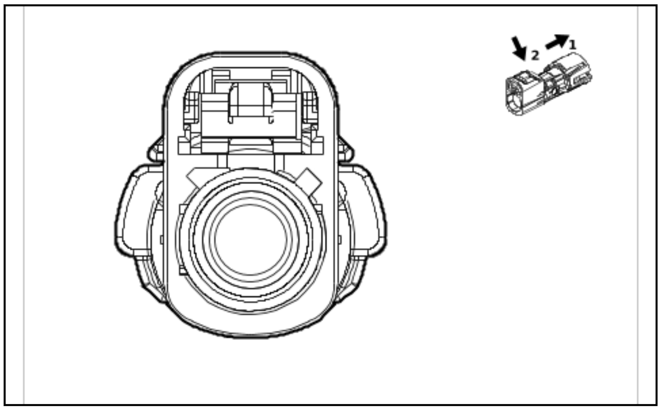
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-42 (RD) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| A | 0.75<br>0.75 | GY<br>GN / WH | 1624<br>5189 | Trailer Backup Lamp Control<br>Trailer Backup Lamp Control | II<br>II | - UET<br>UET |
| B | 5 | WH | 1950 | Ground | I | — |
| C | 2.5 | BU | 47 | Trailer Auxiliary Control | II | — |
| D | 0.75<br>0.75 | GN<br>YE / GY | 1619<br>5187 | Right Rear Trailer Stop/Turn Lamp Control<br>Right Trailer Turn Signal Lamp Control | II<br>II | - UET<br>UET |
| E | 4 | OG | 742 | Battery Positive Voltage | II | — |
| F | 1.5<br>0.75 | BN<br>BN / GY | 2109<br>5184 | Trailer Park Lamp Control<br>Left Trailer Park Lamp Control | II<br>II | - UET<br>UET |
| G | 0.75<br>0.75 | YE<br>BU / WH | 1618<br>5186 | Left Rear Trailer Stop/Turn Lamp Control<br>Left Trailer Turn Signal Lamp Control | II<br>II | - UET<br>UET |

### X88B Tow Vehicle Electrical Receptacle X2



5758030

**Connector Part Information**
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35187032
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)

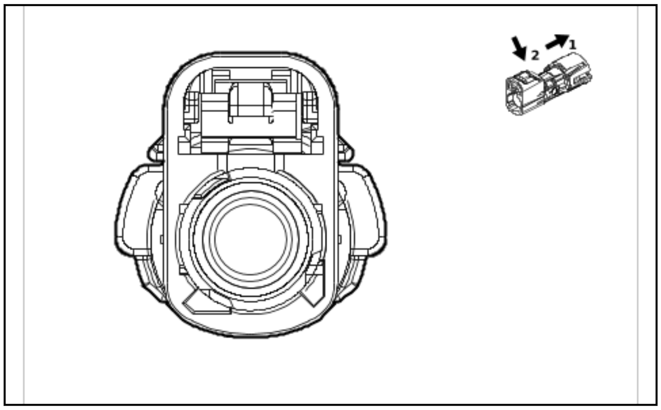
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Trailer Rear Vision Camera Coaxial Video Signal | I | — |

### X88B Tow Vehicle Electrical Receptacle X3



5757455

**Connector Part Information**
- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 35187043
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( OG)

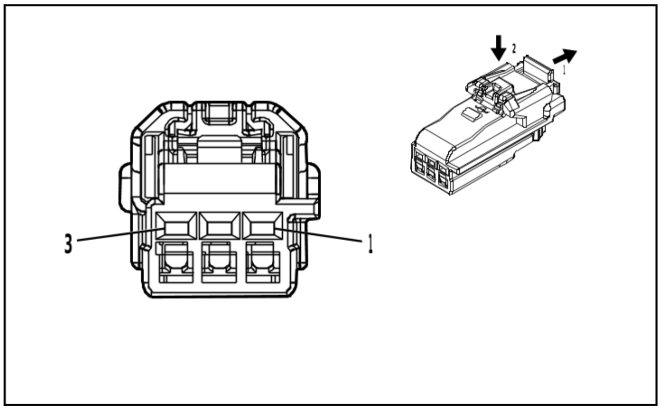
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X88B Tow Vehicle Electrical Receptacle X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | Trailer 2 Rear Vision Camera Coaxial Video Signal | I | — |

### X92BCL USB Receptacle - 3rd Row Seat Left



4971604

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8153
- Service Connector: 84644600
- Description: 3-Way F 1.2 MCON Series( BK)

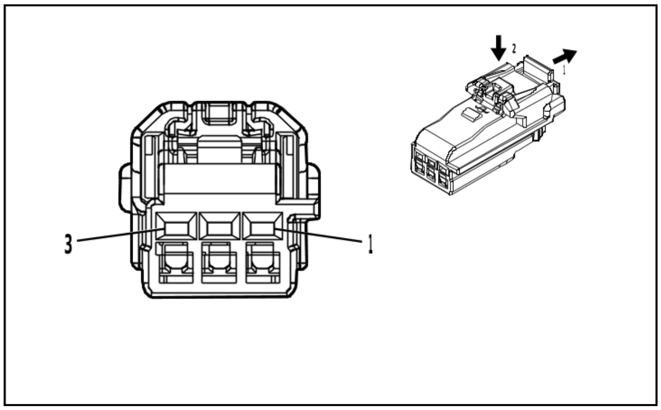
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X92BCL USB Receptacle - 3rd Row Seat Left

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1150 | (3) Ground | (3) I | (3) — |

### X92BCR USB Receptacle - 3rd Row Seat Right



4971604

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-8153
- Service Connector: 84644600
- Description: 3-Way F 1.2 MCON Series( BK)

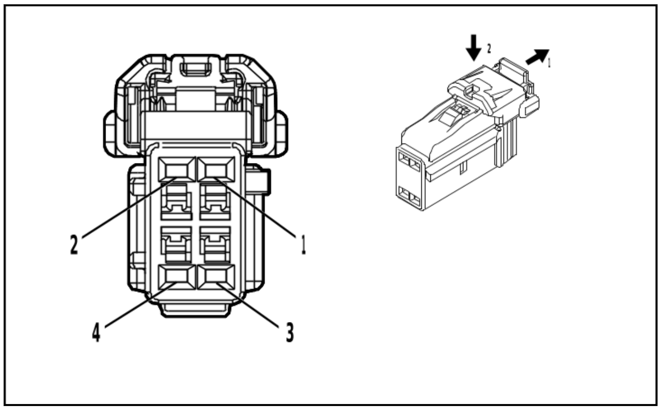
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X92BCR USB Receptacle - 3rd Row Seat Right

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 1450 | (3) Ground | (3) I | (3) — |

### X92CD Dual Charge Only Receptacle - Floor Console Rear (- AZ3)



4872683

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

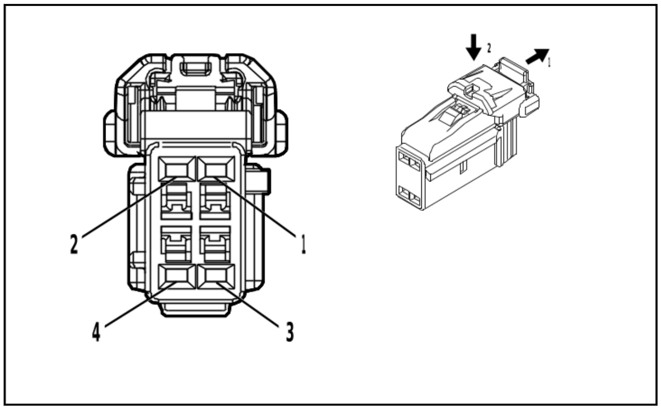
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X92CD Dual Charge Only Receptacle - Floor Console Rear (- AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) YE | (4) 6817 | (4) LED Backlight Dimming Control 1 | (4) I | (4) — |

## X92CD Dual Charge Only Receptacle - Floor Console Rear (AZ3)



4872683

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

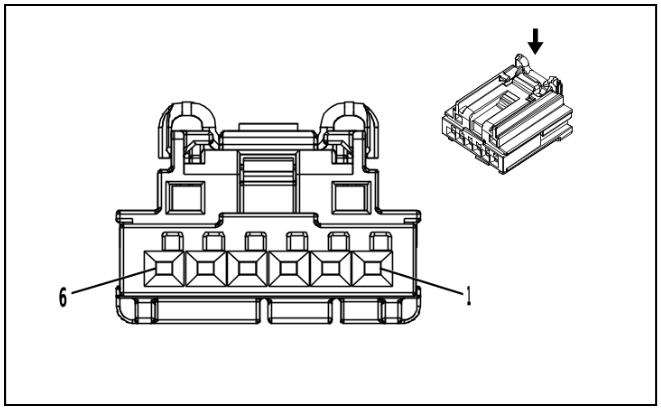
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |

## X92CD Dual Charge Only Receptacle - Floor Console Rear (AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 4701 | (1) Retained Accessory Power Control | (1) I | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 1250 | (2) Ground | (2) I | (2) — |
| 3 | — | — | — | Not Occupied | — | — |
| (4) 4 | (4) 0.5 | (4) YE | (4) 6817 | (4) LED Backlight Dimming Control 1 | (4) I | (4) — |

### X92CF USB 2 Port Receptacle - Floor Console Front X1



3960313

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way F 0.64 Generation Y Series( BK)

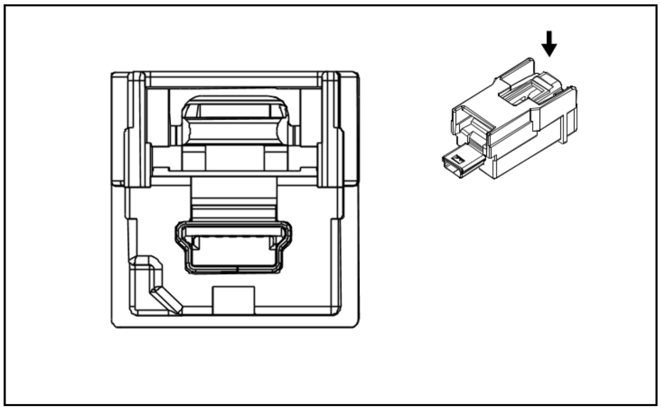
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X92CF USB 2 Port Receptacle - Floor Console Front X1

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1451 | (3) Signal Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X92CF USB 2 Port Receptacle - Floor Console Front X2



2807491

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 111014-9001
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

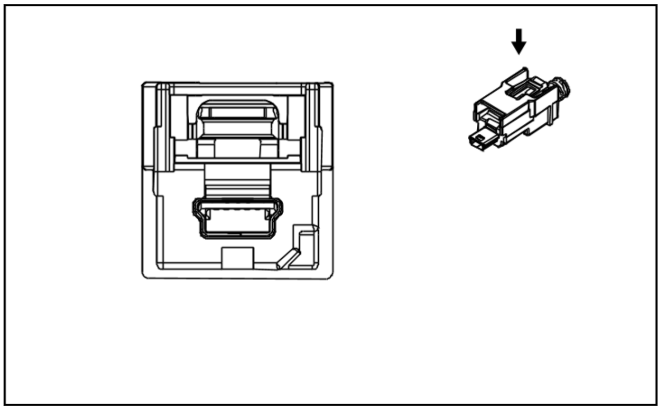
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X92CF USB 2 Port Receptacle - Floor Console Front X2

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### X92CF USB 2 Port Receptacle - Floor Console Front X3



2807425

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 13868727
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( BK)

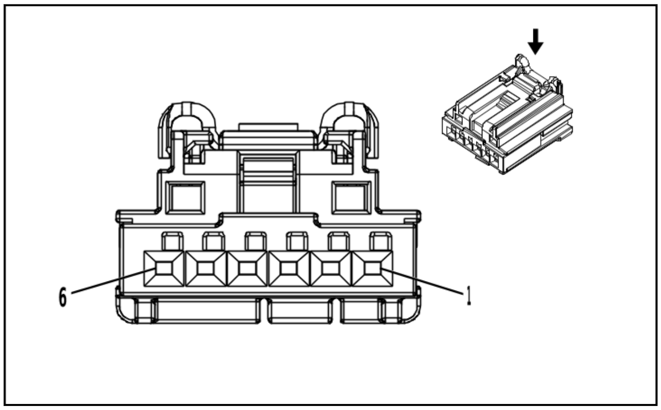
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X92CF USB 2 Port Receptacle - Floor Console Front X3

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### X92IP USB 2 Port Receptacle - Instrument Panel X1 (AZ3)



3960313

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2035363-4
- Service Connector: 19332786
- Description: 6-Way F 0.64 Generation Y Series( BK)

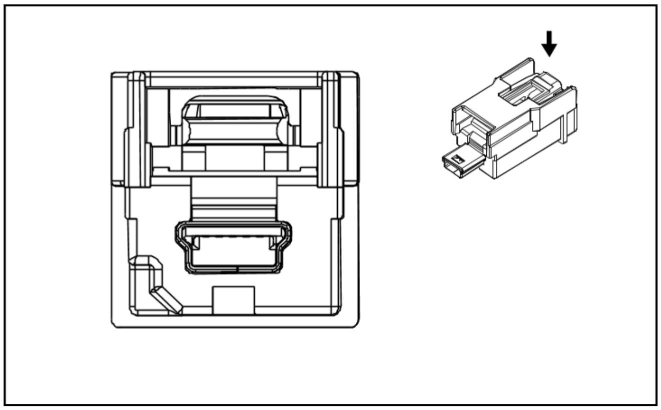
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-64B (L-BU) | No Tool Required |

## X92IP USB 2 Port Receptacle - Instrument Panel X1 (AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / YE | (1) 2340 | (1) Battery Positive Voltage | (1) I | (1) — |
| (2) 2 | (2) 0.35 | (2) YE | (2) 6817 | (2) LED Backlight Dimming Control 1 | (2) I | (2) — |
| (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1451 | (3) Signal Ground | (3) I | (3) — |
| 4 - 6 | — | — | — | Not Occupied | — | — |

### X92IP USB 2 Port Receptacle - Instrument Panel X2 (AZ3)



2807491

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111014-9001
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 5-Way M 2.0 Mini-B USB Type( GY)

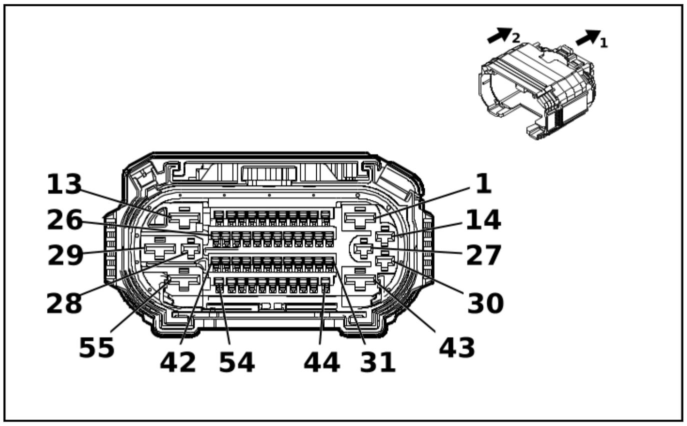
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

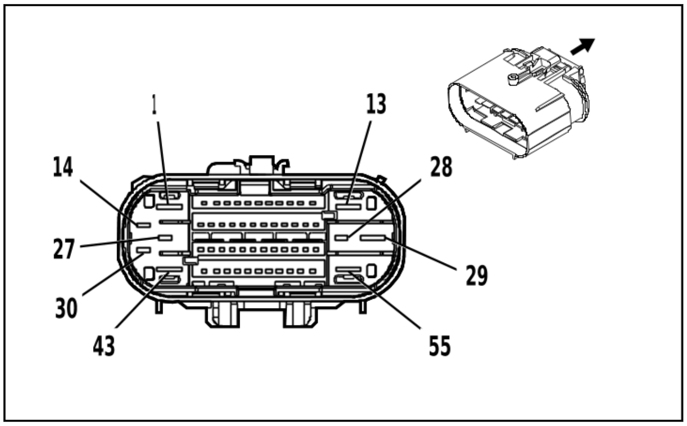
## X92IP USB 2 Port Receptacle - Instrument Panel X2 (AZ3)

| Pin | Size | Color | Circuit | Function | Terminal Type ID | Option |
|---|---|---|---|---|---|---|
| — | — | USB | — | USB Serial Data | I | — |

### X125 Engine Wiring Harness to Body Wiring Harness



5246872



4994369

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 35016653
- Service Connector: 19371184
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 13530983
- Service Connector: 84727363
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( GY)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 19371217 | J-35616-12 (BU) | J-38125-553 |
| IV | 84634921 | J-35616-42 (RD) | J-38125-212 |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84992391 | J-35616-5 (PU) | J-38125-36 |

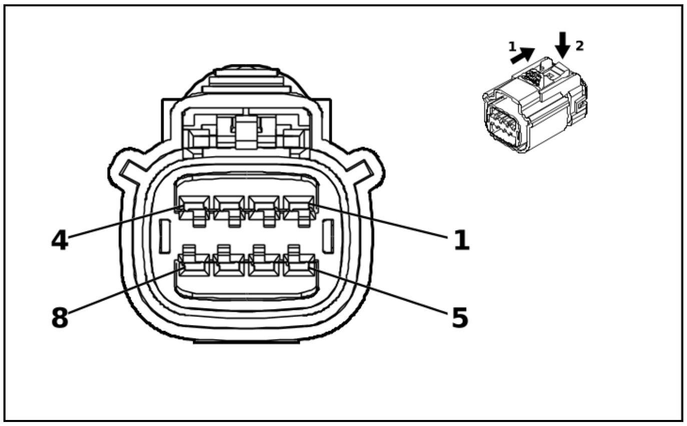
## X125 Engine Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) BK / BU | (3) 1271 | (3) II | (3) — | (3) Accelerator Pedal Position Low Reference 1 | (3) 3 | (3) 0.5 | (3) BK / BU | (3) 1271 | (3) VI | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) GN / WH | (5) 1162 | (5) II | (5) — | (5) Accelerator Pedal Position Signal 2 | (5) 5 | (5) 0.5 | (5) GN / WH | (5) 1162 | (5) VI | (5) — |
| (6) 6 | (6) 0.5 | (6) GN / BN | (6) 507 | (6) II | (6) — | (6) Wait To Start Indicator Control | (6) 6 | (6) 0.35 | (6) GN / BN | (6) 507 | (6) VI | (6) — |
| 7 - 11 | — | — | — | — | — | Not Occupied | 7 - 11 | — | — | — | — | — |
| (12) 12 | (12) 0.75 | (12) BN / YE | (12) 820 | (12) II | (12) — | (12) Center High Mounted Stop Lamp Supply Voltage | (12) 12 | (12) 0.75 | (12) BN / YE | (12) 820 | (12) VI | (12) — |
| 13 | — | — | — | — | — | Not Occupied | 13 | — | — | — | — | — |
| (14) 14 | (14) 2.5 | (14) BU | (14) 47 | (14) I | (14) — | (14) Trailer Auxiliary Control | (14) 14 | (14) 2.5 | (14) BU | (14) 47 | (14) VII | (14) — |
| (15) 15 | (15) 0.5 | (15) YE | (15) 4063 | (15) II | (15) — | (15) Hood Status A Signal | (15) 15 | (15) 0.5 | (15) YE | (15) 4063 | (15) VI | (15) — |
| 16 - 23 | — | — | — | — | — | Not Occupied | 16 - 23 | — | — | — | — | — |
| (24) 24 | (24) 0.5 | (24) BU / GY | (24) 4054 | (24) II | (24) — | (24) Private Serial Data Powertrain CAN Bus [-] Serial Data | (24) 24 | (24) 0.35 | (24) BU / GY | (24) 4054 | (24) VI | (24) — |
| (25) 25 | (25) 0.5 | (25) WH | (25) 4055 | (25) II | (25) — | (25) Private Serial Data Powertrain CAN Bus [+] Serial Data | (25) 25 | (25) 0.35 | (25) WH | (25) 4055 | (25) VI | (25) — |

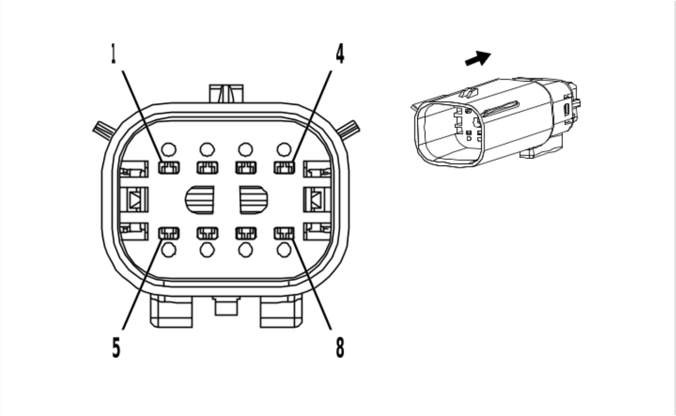
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (26) 26 | (26) 0.5 | (26) WH / RD | (26) 480 | (26) II | (26) — | (26) Engine Control Vehicle Sensors 5 Volt Reference 1 | (26) 26 | (26) 0.5 | (26) WH / RD | (26) 480 | (26) VI | (26) — |
| (27) 27 | (27) 0.5 | (27) BK / GN | (27) 580 | (27) I | (27) — | (27) Engine Control Sensors Low Reference 2 | (27) 27 | (27) 0.5 | (27) BK / GN | (27) 580 | (27) VII | (27) — |
| (28) 28 | (28) 0.5 | (28) BK / YE | (28) 548 | (28) I | (28) — | (28) Engine Control Sensors Low Reference 1 | (28) 28 | (28) 0.5 | (28) BK / YE | (28) 548 | (28) VII | (28) — |
| (29) 29 | (29) 0.5 | (29) BU / RD | (29) 460 | (29) IV | (29) — | (29) Engine Control Sensors 5 Volt Reference 1 | (29) 29 | (29) 0.5 | (29) BU / RD | (29) 460 | (29) V | (29) — |
| 30 - 31 | — | — | — | — | — | Not Occupied | 30 - 31 | — | — | — | — | — |
| (32) 32 | (32) 0.5 | (32) BN | (32) 10515 | (32) II | (32) — | (32) Electronic Transmission Range Select Shifter Position Sensor 1 Signal | (32) 32 | (32) 0.5 | (32) BN | (32) 10515 | (32) VI | (32) — |
| (33) 33 | (33) 0.5 | (33) GY | (33) 10518 | (33) II | (33) — | (33) Electronic Transmission Range Select Shifter Position Sensor 2 Signal | (33) 33 | (33) 0.5 | (33) GY | (33) 10518 | (33) VI | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.5 | (35) BK / GY | (35) 626 | (35) II | (35) — | (35) Engine Control Vehicle Sensors Low Reference 1 | (35) 35 | (35) 0.5 | (35) BK / GY | (35) 626 | (35) VI | (35) — |
| (36) 36 | (36) 0.5 | (36) WH / GN | (36) 5380 | (36) II | (36) — | (36) Brake Position Sensor Signal | (36) 36 | (36) 0.5 | (36) WH / GN | (36) 5380 | (36) VI | (36) — |
| (37) 37 | (37) 0.5 | (37) WH / RD | (37) 480 | (37) II | (37) — | (37) Engine Control Vehicle Sensors 5 Volt Reference 1 | (37) 37 | (37) 0.35 | (37) WH / RD | (37) 480 | (37) VI | (37) — |
| 38 | — | — | — | — | — | Not Occupied | 38 | — | — | — | — | — |
| (39) 39 | (39) 0.5 | (39) GN / WH | (39) 4622 | (39) II | (39) — | (39) Engine Control Module LIN Bus 2 | (39) 39 | (39) 0.35 | (39) GN / WH | (39) 4622 | (39) VI | (39) — |
| (40) 40 | (40) 0.5 | (40) BK / VT | (40) 1272 | (40) II | (40) — | (40) Accelerator Pedal Position Low Reference 2 | (40) 40 | (40) 0.5 | (40) BK / VT | (40) 1272 | (40) VI | (40) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 41 | — | — | — | — | — | Not Occupied | 41 | — | — | — | — | — |
| (42) 42 | (42) 0.5 | (42) YE / BK | (42) 625 | (42) II | (42) — | (42) Starter Enable Relay Control | (42) 42 | (42) 0.35 | (42) YE / BK | (42) 625 | (42) VI | (42) — |
| (43) 43 | (43) 6<br>(43) 5 | (43) BK / WH<br>(43) BK / WH | (43) 6151<br>(43) 6151 | (43) IV<br>(43) IV | (43) L84/L87<br>(43) LZ0 | (43) Engine Control Module Ground<br>(43) Engine Control Module Ground | (43) 43 | (43) 6 | (43) BK / WH | (43) 6151 | (43) V | (43) — |
| (44) 44 | (44) 1 | (44) RD / GN | (44) 1840 | (44) III | (44) — | (44) Battery Positive Voltage | (44) 44 | (44) 0.75 | (44) RD / GN | (44) 1840 | (44) VI | (44) — |
| 45 - 46 | — | — | — | — | — | Not Occupied | 45 - 46 | — | — | — | — | — |
| (47) 47 | (47) 0.5 | (47) BU / BN | (47) 7573 | (47) II | (47) — | (47) Air Conditioning Compressor Solenoid Valve Control | (47) 47 | (47) 0.5 | (47) BU / BN | (47) 7573 | (47) VI | (47) — |
| 48 | — | — | — | — | — | Not Occupied | 48 | — | — | — | — | — |
| (49) 49 | (49) 0.5 | (49) YE / WH | (49) 1161 | (49) II | (49) — | (49) Accelerator Pedal Position Signal 1 | (49) 49 | (49) 0.5 | (49) YE / WH | (49) 1161 | (49) VI | (49) — |
| (50) 50 | (50) 0.5 | (50) WH / RD | (50) 1164 | (50) II | (50) — | (50) Accelerator Pedal Position 5V Reference 1 | (50) 50 | (50) 0.5 | (50) WH / RD | (50) 1164 | (50) VI | (50) — |
| (51) 51 | (51) 0.5 | (51) BN / RD | (51) 1274 | (51) II | (51) — | (51) Accelerator Pedal Position 5V Reference 2 | (51) 51 | (51) 0.5 | (51) BN / RD | (51) 1274 | (51) VI | (51) — |
| 52 | — | — | — | — | — | Not Occupied | 52 | — | — | — | — | — |
| (53) 53 | (53) 0.5 | (53) BU / YE | (53) 7574 | (53) II | (53) — | (53) Air Conditioning Compressor Solenoid Valve Control | (53) 53 | (53) 0.5 | (53) BU / YE | (53) 7574 | (53) VI | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

## X128B Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L87)



5253496



2667653

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 15514667
- Service Connector: 84766296
- Description: 8-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 13520589
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 MX Series, Sealed( BK)

### Terminal Part Information

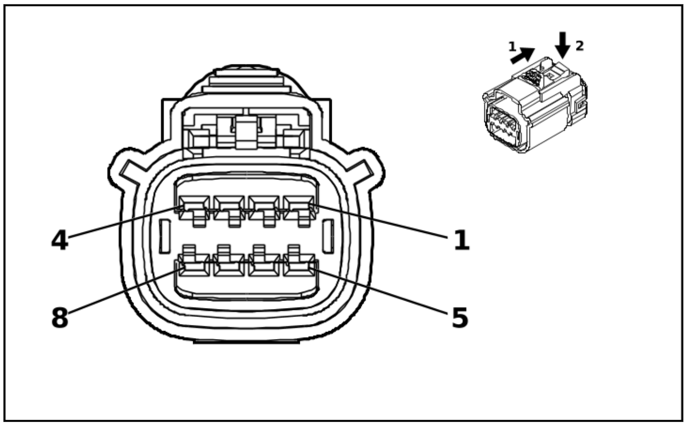
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

### X128B Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (L87)

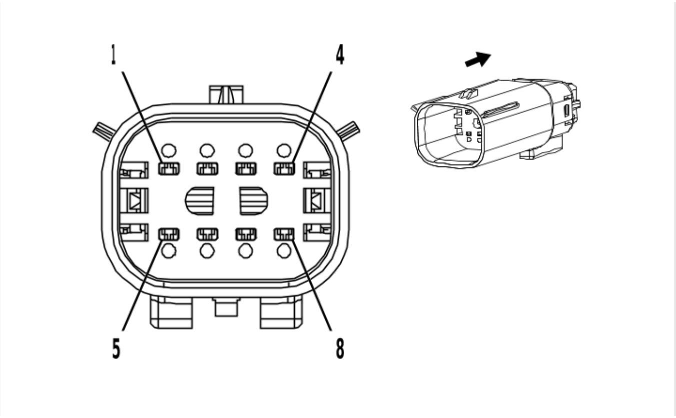
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) I | (1) — | (1) Intake Camshaft Position Sensor 1 Voltage Reference | (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) I | (2) — | (2) Intake Camshaft Position Sensor Low Reference 1 | (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) I | (3) — | (3) Intake Camshaft Position Sensor 1 | (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BU | (4) 179 | (4) I | (4) — | (4) Engine Oil Pump Control | (4) 4 | (4) 0.5 | (4) BU | (4) 179 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) I | (5) — | (5) Intake Camshaft Position Actuator Solenoid Valve 1 | (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) BK / BN | (6) 6753 | (6) I | (6) — | (6) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (6) 6 | (6) 0.5 | (6) BK / BN | (6) 6753 | (6) II | (6) — |
| (7) 7 | (7) 0.75 | (7) VT / BU | (7) 5293 | (7) I | (7) — | (7) Powertrain Main Relay Fused Supply Voltage 4 | (7) 7 | (7) 0.75 | (7) VT / BU | (7) 5293 | (7) II | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |

### X128C Engine Wiring Harness to Camshaft Position Sensor Wire



5253496



2667653

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F

**Connector Part Information**
- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 33482-4827
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

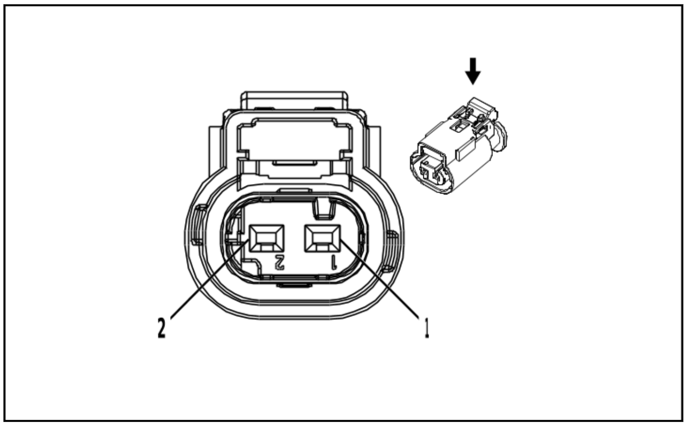
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X128C Engine Wiring Harness to Camshaft Position Sensor Wire

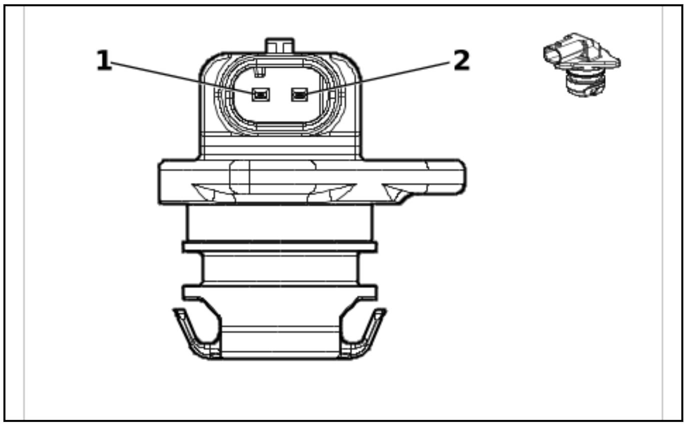
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) I | (1) — | (1) Intake Camshaft Position Sensor 1 Voltage Reference | (1) 1 | (1) 0.5 | (1) GY / BU | (1) 5300 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) I | (2) — | (2) Intake Camshaft Position Sensor Low Reference 1 | (2) 2 | (2) 0.5 | (2) BK / GN | (2) 5301 | (2) II | (2) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) I | (3) — | (3) Intake Camshaft Position Sensor 1 | (3) 3 | (3) 0.5 | (3) YE / VT | (3) 5275 | (3) II | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) I | (5) — | (5) Intake Camshaft Position Actuator Solenoid Valve 1 | (5) 5 | (5) 0.5 | (5) VT / BN | (5) 5284 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / BN | (6) 6753 | (6) I | (6) — | (6) Camshaft Position Actuator Solenoid Valve 1 Low Reference | (6) 6 | (6) 0.5 | (6) BK / BN | (6) 6753 | (6) II | (6) — |
| 7 - 8 | — | — | — | — | — | Not Occupied | 7 - 8 | — | — | — | — | — |

## X129A Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Harness (L87)



2717066



5869753

**Connector Part Information**

- Harness Type: Camshaft Position Sensor Wire
- OEM Connector: 10010337
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 Multilock Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 310832B
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 Series, Sealed( BK)

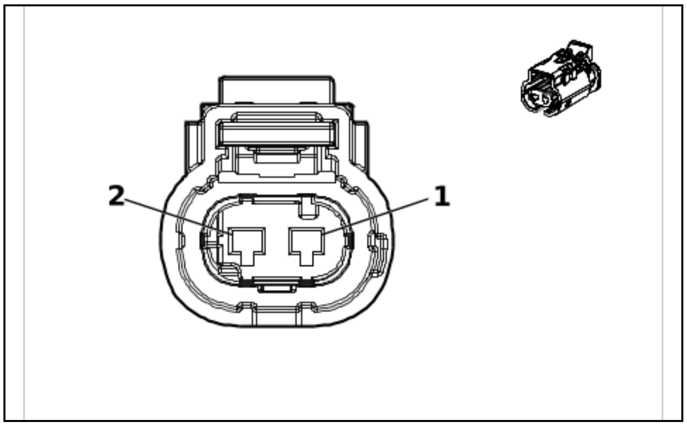
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

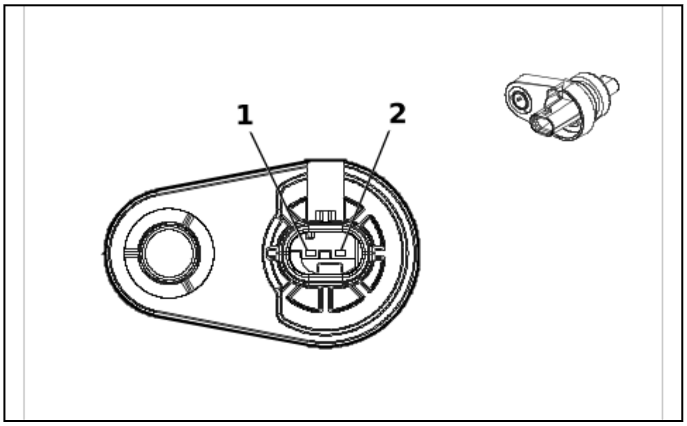
## X129A Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Harness (L87)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) — | (1) VT / BU | (1) 5293 | (1) I | (1) — | (1) Powertrain Main Relay Fused Supply Voltage 4 | (1) 1 | (1) — | (1) VT / BU | (1) 5293 | (1) II | (1) — |
| (2) 2 | (2) — | (2) BU | (2) 179 | (2) I | (2) — | (2) Engine Oil Pump Control | (2) 2 | (2) — | (2) BU | (2) 179 | (2) II | (2) — |

### X129B Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (LZ0)



6776339



6472905

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 10530497
- Service Connector: 86308598
- Description: 2-Way F 1.2 MLK Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Oil Pump Flow Control Solenoid Valve Harness
- OEM Connector: 12698857
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 1.2 Multilock Series, Sealed( BK)

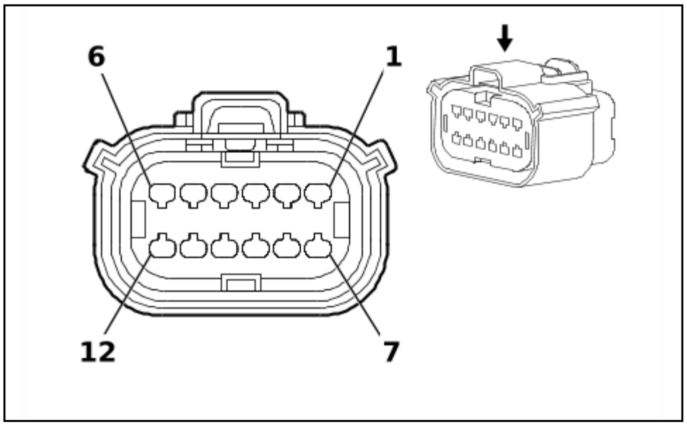
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |

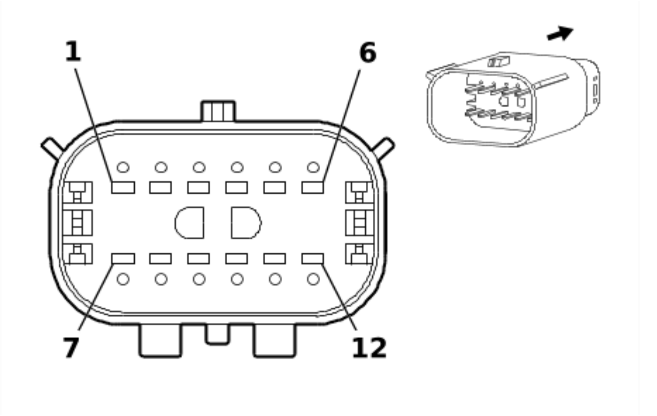
## X129B Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness (LZ0)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BN | (1) 106 | (1) I | (1) — | (1) Oil Pump Motor Control | (1) 1 | (1) 0.5 | (1) YE / BN | (1) 106 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 179 | (2) I | (2) — | (2) Engine Oil Pump Control | (2) 2 | (2) 0.5 | (2) BU | (2) 179 | (2) II | (2) — |

### X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left (L84 / L87)



1825165



1825167

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1216
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Left
- OEM Connector: 13520581
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

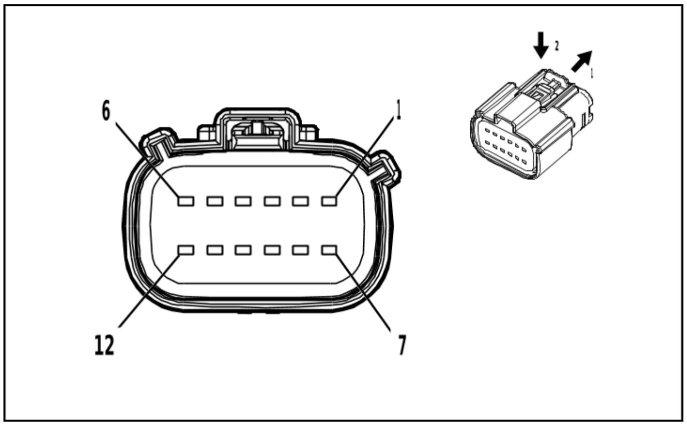
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left (L84 / L87)

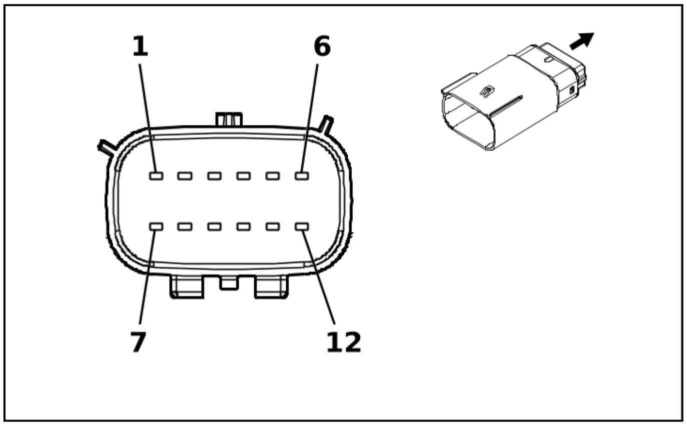
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN / WH | (1) 4901 | (1) I | (1) — | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) 1 | (1) 18 | (1) BN / WH | (1) 4901 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) GN / GY | (2) 4903 | (2) I | (2) — | (2) Direct Fuel Injector High Voltage Supply Cylinder 3 | (2) 2 | (2) 18 | (2) GN / GY | (2) 4903 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GN / WH | (3) 4905 | (3) I | (3) — | (3) Direct Fuel Injector High Voltage Supply Cylinder 5 | (3) 3 | (3) 18 | (3) GN / WH | (3) 4905 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) WH / YE | (4) 4907 | (4) I | (4) — | (4) Direct Fuel Injector High Voltage Supply Cylinder 7 | (4) 4 | (4) 18 | (4) WH / YE | (4) 4907 | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) BN | (5) 4801 | (5) I | (5) — | (5) Direct Fuel Injector High Voltage Control Cylinder 1 | (5) 5 | (5) 18 | (5) BN | (5) 4801 | (5) II | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.75 | (7) GN | (7) 4803 | (7) I | (7) — | (7) Direct Fuel Injector High Voltage Control Cylinder 3 | (7) 7 | (7) 18 | (7) GN | (7) 4803 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) WH / GN | (8) 4805 | (8) I | (8) — | (8) Direct Fuel Injector High Voltage Control Cylinder 5 | (8) 8 | (8) 18 | (8) WH / GN | (8) 4805 | (8) II | (8) — |
| (9) 9 | (9) 0.75 | (9) YE / GY | (9) 4807 | (9) I | (9) — | (9) Direct Fuel Injector High Voltage Control Cylinder 7 | (9) 9 | (9) 18 | (9) YE / GY | (9) 4807 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) WH / RD | (10) 480 | (10) I | (10) — | (10) Engine Control Vehicle Sensors 5 Volt Reference 1 | (10) 10 | (10) 20 | (10) BN / RD | (10) 480 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) BU / WH | (11) 2918 | (11) I | (11) — | (11) Fuel Rail Pressure Sensor Signal | (11) 11 | (11) 20 | (11) BU / WH | (11) 2918 | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) BK / YE | (12) 548 | (12) I | (12) — | (12) Engine Control Sensors Low Reference 1 | (12) 12 | (12) 20 | (12) BK / GN | (12) 548 | (12) II | (12) — |

### X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left (LZ0)



4584248



5187933

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1259
- Service Connector: 19333239
- Description: 12-Way F 1.5 MX Series, Sealed( D-GY)

**Connector Part Information**

- Harness Type: Fuel Injector Wiring Harness
- OEM Connector: 33482-6261
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed( GY)

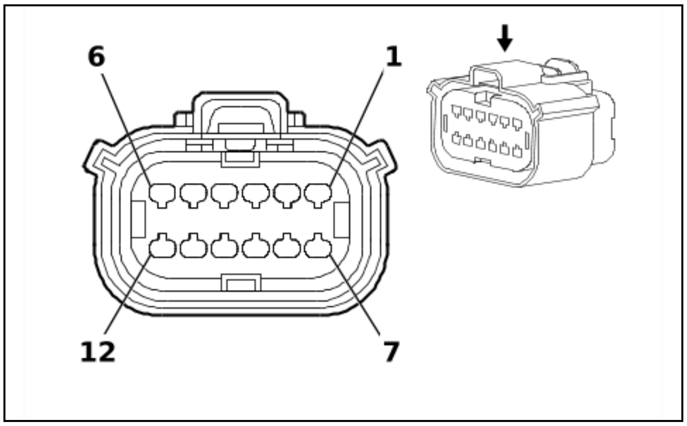
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | J-35616-3 (GY) | No Tool Required |

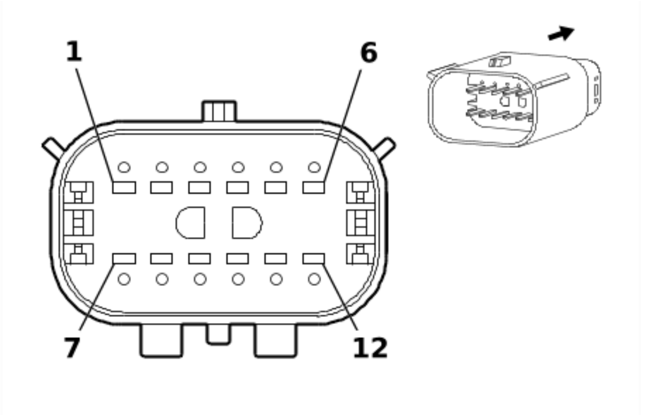
## X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left (LZ0)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1.5 | (1) BN / WH | (1) 4901 | (1) I | (1) — | (1) Direct Fuel Injector High Voltage Supply Cylinder 1 | (1) 1 | (1) 1.5 | (1) BN / WH | (1) 4901 | (1) II | (1) — |
| (2) 2 | (2) 1.5 | (2) BN | (2) 4801 | (2) I | (2) — | (2) Direct Fuel Injector High Voltage Control Cylinder 1 | (2) 2 | (2) 1.5 | (2) BN | (2) 4801 | (2) II | (2) — |
| (3) 3 | (3) 1.5 | (3) BU / GY | (3) 4902 | (3) I | (3) — | (3) Direct Fuel Injector High Voltage Supply Cylinder 2 | (3) 3 | (3) 1.5 | (3) BU / GY | (3) 4902 | (3) II | (3) — |
| (4) 4 | (4) 1.5 | (4) BU | (4) 4802 | (4) I | (4) — | (4) Direct Fuel Injector High Voltage Control Cylinder 2 | (4) 4 | (4) 1.5 | (4) BU | (4) 4802 | (4) II | (4) — |
| (5) 5 | (5) 1.5 | (5) GN / GY | (5) 4903 | (5) I | (5) — | (5) Direct Fuel Injector High Voltage Supply Cylinder 3 | (5) 5 | (5) 1.5 | (5) GN / GY | (5) 4903 | (5) II | (5) — |
| (6) 6 | (6) 1.5 | (6) GN | (6) 4803 | (6) I | (6) — | (6) Direct Fuel Injector High Voltage Control Cylinder 3 | (6) 6 | (6) 1.5 | (6) GN | (6) 4803 | (6) II | (6) — |
| (7) 7 | (7) 1.5 | (7) BU / WH | (7) 4904 | (7) I | (7) — | (7) Direct Fuel Injector High Voltage Supply Cylinder 4 | (7) 7 | (7) 1.5 | (7) BU / WH | (7) 4904 | (7) II | (7) — |
| (8) 8 | (8) 1.5 | (8) GY / BU | (8) 4804 | (8) I | (8) — | (8) Direct Fuel Injector High Voltage Control Cylinder 4 | (8) 8 | (8) 1.5 | (8) GY / BU | (8) 4804 | (8) II | (8) — |
| (9) 9 | (9) 1.5 | (9) GN / WH | (9) 4905 | (9) I | (9) — | (9) Direct Fuel Injector High Voltage Supply Cylinder 5 | (9) 9 | (9) 1.5 | (9) GN / WH | (9) 4905 | (9) II | (9) — |
| (10) 10 | (10) 1.5 | (10) WH / GN | (10) 4805 | (10) I | (10) — | (10) Direct Fuel Injector High Voltage Control Cylinder 5 | (10) 10 | (10) 1.5 | (10) WH / GN | (10) 4805 | (10) II | (10) — |
| (11) 11 | (11) 1.5 | (11) VT / GY | (11) 4906 | (11) I | (11) — | (11) Direct Fuel Injector High Voltage Supply Cylinder 6 | (11) 11 | (11) 1.5 | (11) VT / GY | (11) 4906 | (11) II | (11) — |
| (12) 12 | (12) 1.5 | (12) VT / GN | (12) 4806 | (12) I | (12) — | (12) Direct Fuel Injector High Voltage Control Cylinder 6 | (12) 12 | (12) 1.5 | (12) VT / GN | (12) 4806 | (12) II | (12) — |

### X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Right



1825165



1825167

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1226
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Fuel Injector Wiring Harness - Right
- OEM Connector: 334826211
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

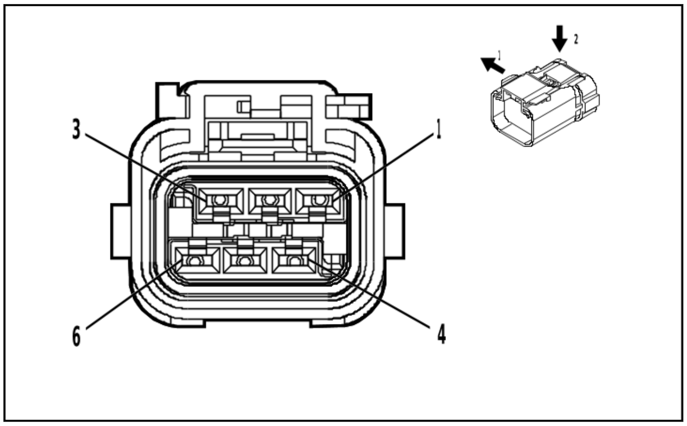
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Right

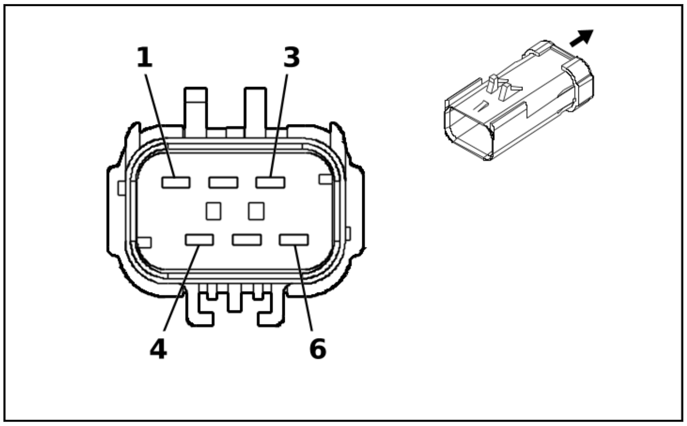
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) I | (1) — | (1) Direct Fuel Injector High Voltage Supply Cylinder 2 | (1) 1 | (1) 0.75 | (1) BU / GY | (1) 4902 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BU / WH | (2) 4904 | (2) I | (2) — | (2) Direct Fuel Injector High Voltage Supply Cylinder 4 | (2) 2 | (2) 0.75 | (2) BU / WH | (2) 4904 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) VT / GY | (3) 4906 | (3) I | (3) — | (3) Direct Fuel Injector High Voltage Supply Cylinder 6 | (3) 3 | (3) 0.75 | (3) VT / GY | (3) 4906 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) GY / WH | (4) 4908 | (4) I | (4) — | (4) Direct Fuel Injector High Voltage Supply Cylinder 8 | (4) 4 | (4) 0.75 | (4) GY / WH | (4) 4908 | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) BU | (5) 4802 | (5) I | (5) — | (5) Direct Fuel Injector High Voltage Control Cylinder 2 | (5) 5 | (5) 0.75 | (5) BU | (5) 4802 | (5) II | (5) — |
| 6 - 7 | — | — | — | — | — | Not Occupied | 6 - 7 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.75 | (8) GY / BU | (8) 4804 | (8) I | (8) — | (8) Direct Fuel Injector High Voltage Control Cylinder 4 | (8) 8 | (8) 0.75 | (8) GY / BU | (8) 4804 | (8) II | (8) — |
| (9) 9 | (9) 0.75 | (9) VT / GN | (9) 4806 | (9) I | (9) — | (9) Direct Fuel Injector High Voltage Control Cylinder 6 | (9) 9 | (9) 0.75 | (9) VT / GN | (9) 4806 | (9) II | (9) — |
| (10) 10 | (10) 0.75 | (10) GY | (10) 4808 | (10) I | (10) — | (10) Direct Fuel Injector High Voltage Control Cylinder 8 | (10) 10 | (10) 0.75 | (10) GY | (10) 4808 | (10) II | (10) — |
| (11) 11 | (11) 0.75 | (11) VT / BK | (11) 7300 | (11) I | (11) — | (11) High Pressure Fuel Pump Low Control | (11) 11 | (11) 0.75 | (11) VT / BK | (11) 7300 | (11) II | (11) — |
| (12) 12 | (12) 0.75 | (12) YE | (12) 7301 | (12) I | (12) — | (12) High Pressure Fuel Pump High Control | (12) 12 | (12) 0.75 | (12) YE | (12) 7301 | (12) II | (12) — |

### X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0)



4997615



5187846

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 35063643
- Service Connector: 86825462
- Description: 6-Way F 2.8 APEX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Diesel Glow Plug Wiring Harness
- OEM Connector: 54200612
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M 2.8 APEX Series, Sealed( BK)

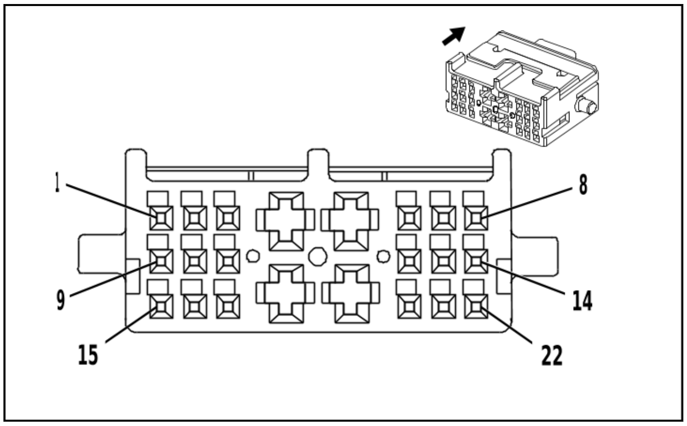
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BU | (1) 1581 | (1) I | (1) — | (1) Glow Plug 1 Control | (1) 1 | (1) 2.5 | (1) GY / RD | (1) 1581 | (1) II | (1) — |
| (2) 2 | (2) 2.5 | (2) GY / BN | (2) 1582 | (2) I | (2) — | (2) Glow Plug 2 Control | (2) 2 | (2) 2.5 | (2) GY / BK | (2) 1582 | (2) II | (2) — |
| (3) 3 | (3) 2.5 | (3) GY / GN | (3) 1583 | (3) I | (3) — | (3) Glow Plug 3 Control | (3) 3 | (3) 2.5 | (3) GY / GN | (3) 1583 | (3) II | (3) — |
| (4) 4 | (4) 2.5 | (4) GY / YE | (4) 1584 | (4) I | (4) — | (4) Glow Plug 4 Control | (4) 4 | (4) 2.5 | (4) GY / YE | (4) 1584 | (4) II | (4) — |
| (5) 5 | (5) 2.5 | (5) GY / WH | (5) 1585 | (5) I | (5) — | (5) Glow Plug 5 Control | (5) 5 | (5) 2.5 | (5) GY / WH | (5) 1585 | (5) II | (5) — |
| (6) 6 | (6) 2.5 | (6) GY / VT | (6) 1586 | (6) I | (6) — | (6) Glow Plug 6 Control | (6) 6 | (6) 2.5 | (6) GY | (6) 1586 | (6) II | (6) — |

### X176 Automatic Transmission Wiring Harness to atic Transmission Wiring Harness to Automatic Transmission Wiring Harness - Case



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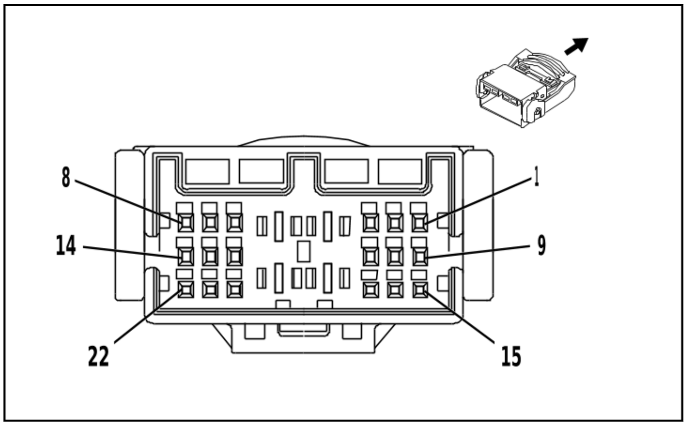


3977770

**Connector Part Information**

- Harness Type: Automatic Transmission Wiring Harness
- OEM Connector: 1897543-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way F 0.64 Micro-Quadlock, 2.8 Micro-Power Series( NA)

**Connector Part Information**

- Harness Type: atic Transmission Wiring Harness to Automatic Transmission Wiring Harness - Case
- OEM Connector: 13584916
- Service Connector: Service by Harness - See Part Catalog
- Description: 22-Way M 0.64 Micro-Quadlock, 2.8 Micro-Power Series( NA)

## Terminal Part Information

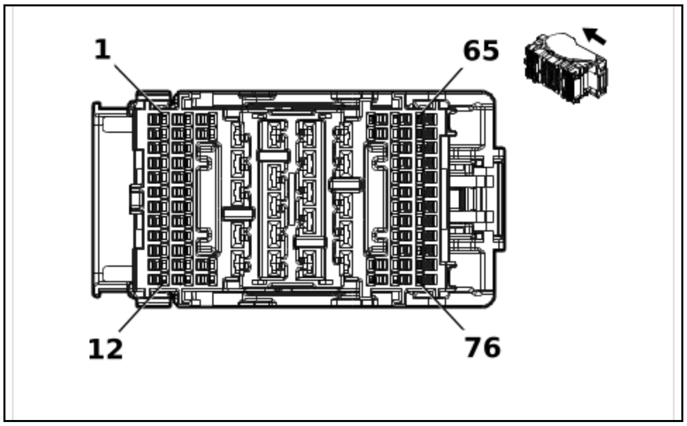
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-64B (L-BU) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |

## X176 Automatic Transmission Wiring Harness to atic Transmission Wiring Harness to Automatic Transmission Wiring Harness - Case

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT | (1) 7819 | (1) II | (1) — | (1) Default Disable Solenoid Control | (1) 1 | (1) 0.5 | (1) VT | (1) 12513 | (1) III | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / OG | (2) 1530 | (2) II | (2) — | (2) Transmission Line Pressure Control Solenoid Valve Control | (2) 2 | (2) 0.5 | (2) GN / OG | (2) 1530 | (2) III | (2) — |
| (3) 3 | (3) 0.5 | (3) GY / BN | (3) 422 | (3) II | (3) — | (3) Torque Converter Clutch Solenoid Valve Control | (3) 3 | (3) 0.5 | (3) GY / BN | (3) 422 | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) BN | (4) 6387 | (4) I | (4) — | (4) Transmission High Side Driver 1 Control | (4) 4 | (4) 0.5 | (4) BN | (4) 6387 | (4) III | (4) — |
| 5 | — | — | — | — | — | Not Occupied | 5 | — | — | — | — | — |
| (6) 6 | (6) 0.5 | (6) YE | (6) 6317 | (6) II | (6) — | (6) Electronic Transmission Range Select Out of Park Switch Signal | (6) 6 | (6) 0.5 | (6) YE | (6) 6317 | (6) III | (6) — |
| (7) 7 | (7) 0.5 | (7) YE / GY | (7) 6319 | (7) II | (7) — | (7) Electronic Transmission Range Select Out of Park Switch 2 Signal | (7) 7 | (7) 0.5 | (7) YE / GY | (7) 6319 | (7) III | (7) — |
| (8) 8 | (8) 0.5 | (8) GN | (8) 4170 | (8) II | (8) — | (8) Transmission Output Shaft Speed Sensor Circuit 9V Reference | (8) 8 | (8) 0.5 | (8) GN | (8) 4170 | (8) III | (8) — |
| (9) 9 | (9) 0.5 | (9) OG | (9) 2159 | (9) II | (9) — | (9) Park Inhibit Solenoid Assembly Control | (9) 9 | (9) 0.5 | (9) OG | (9) 2159 | (9) III | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / GY | (10) 3706 | (10) II | (10) — | (10) Electronic Transmission Range Select Switch Analog Signal 1 | (10) 10 | (10) 0.5 | (10) BK / GY | (10) 3706 | (10) III | (10) — |
| (11) 11 | (11) 0.5 | (11) BU | (11) 4171 | (11) II | (11) — | (11) Transmission Input Shaft Speed Sensor Circuit 9V Reference | (11) 11 | (11) 0.5 | (11) BU | (11) 4171 | (11) III | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |
| (13) 13 | (13) 0.5 | (13) BU / BN | (13) 586 | (13) II | (13) — | (13) Transmission Fluid Temperature Sensor Low Reference | (13) 13 | (13) 0.5 | (13) BU / BN | (13) 586 | (13) III | (13) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (14) 14 | (14) 0.5 | (14) BN / YE | (14) 585 | (14) II | (14) — | (14) Transmission Fluid Temperature Sensor Signal | (14) 14 | (14) 0.5 | (14) BN / YE | (14) 585 | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) BU / GN | (15) 6404 | (15) II | (15) — | (15) Clutch Solenoid Valve E Control | (15) 15 | (15) 0.5 | (15) BU / GN | (15) 12461 | (15) III | (15) — |
| (16) 16 | (16) 0.5 | (16) GN / BN | (16) 6403 | (16) II | (16) — | (16) Clutch Solenoid Valve D Control | (16) 16 | (16) 0.5 | (16) GN / BN | (16) 12462 | (16) III | (16) — |
| (17) 17 | (17) 0.5 | (17) GY | (17) 6402 | (17) II | (17) — | (17) Clutch Solenoid Valve C Control | (17) 17 | (17) 0.5 | (17) GY | (17) 12463 | (17) III | (17) — |
| (18) 18 | (18) 0.5 | (18) WH | (18) 6388 | (18) I | (18) — | (18) Transmission High Side Driver 2 Control | (18) 18 | (18) 0.5 | (18) WH | (18) 6388 | (18) III | (18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 0.5 | (20) BN / WH | (20) 4509 | (20) II | (20) — | (20) Transmission Clutch F Control | (20) 20 | (20) 0.5 | (20) BN / WH | (20) 12464 | (20) III | (20) — |
| (21) 21 | (21) 0.5 | (21) YE / VT | (21) 4507 | (21) II | (21) — | (21) Transmission Clutch H Control | (21) 21 | (21) 0.5 | (21) YE / VT | (21) 12465 | (21) III | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / GY | (22) 4508 | (22) II | (22) — | (22) Transmission Clutch G Control | (22) 22 | (22) 0.5 | (22) BU / GY | (22) 12466 | (22) III | (22) — |

### X210 Instrument Panel Wiring Harness to Body Wiring Harness



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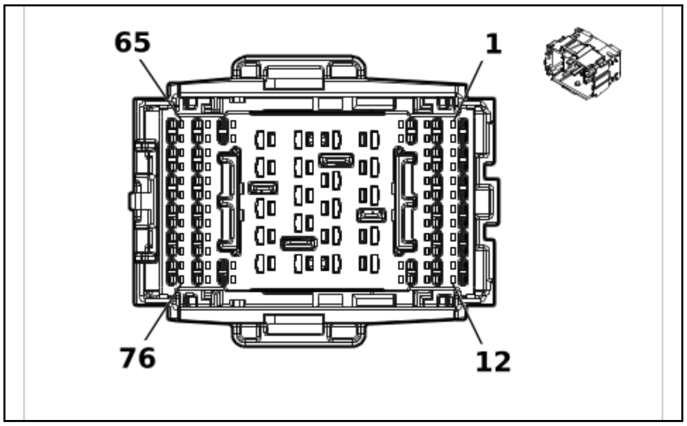


6171465

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0188
- Service Connector: 85026856
- Description: 76-Way F 1.2 Sumitomo, 2.8 YESC Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0184
- Service Connector: 13549030
- Description: 76-Way M 1.2 Sumitomo, 2.8 YESC Series( BK)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |
| III | Service by Cable | J-35616-12 (BU) | J-381225-215A |
| IV | 84616651 | J-35616-13 (BU) | J-38125-215A |
| V | 84888592 | J-35616-5 (PU) | J-38125-11A |
| VI | Service by Cable | J-35616-13 (BU) | J-381225-215A |

### X210 Instrument Panel Wiring Harness to Body Wiring Harness

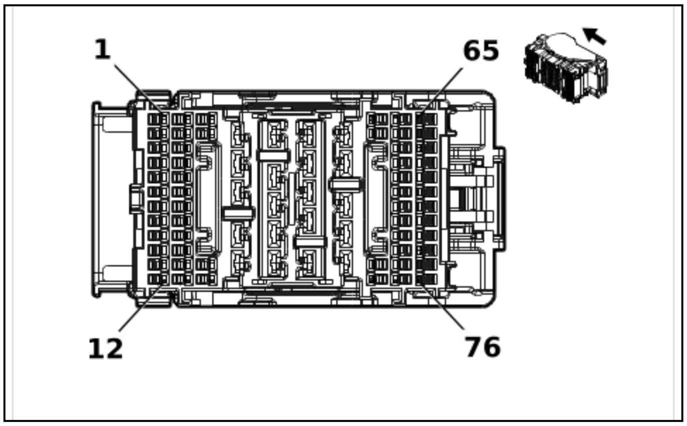
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BU / BN | (1) 7744 | (1) I | (1) — | (1) Driver Illumination Lamp Ground | (1) 1 | (1) 0.35 | (1) BU / BN | (1) 7744 | (1) IV | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / VT | (2) 2246 | (2) I | (2) — | (2) Driver Illumination Lamp 1 Control | (2) 2 | (2) 0.35 | (2) WH / VT | (2) 2246 | (2) IV | (2) — |
| (3) 3 | (3) 0.35 | (3) YE / BU | (3) 2245 | (3) I | (3) — | (3) Driver Illumination Lamp 2 Control | (3) 3 | (3) 0.35 | (3) YE / BU | (3) 2245 | (3) IV | (3) — |
| 4 - 5 | — | — | — | — | — | Not Occupied | 4 - 5 | — | — | — | — | — |
| (6) 6 | (6) 0.35 | (6) GN / WH | (6) 2854 | (6) I | (6) — | (6) Body Control Module LIN Bus 8 | (6) 6 | (6) 0.35 | (6) GN / WH | (6) 2854 | (6) IV | (6) — |
| 7 | — | — | — | — | — | Not Occupied | 7 | — | — | — | — | — |
| (8) 8 | (8) 0.75 | (8) BU / BK | (8) 115 | (8) I | (8) — | (8) Right Rear Speaker [-] Control | (8) 8 | (8) 0.75 | (8) BU / BK | (8) 115 | (8) IV | (8) — |
| (9) 9 | (9) 0.75 | (9) WH | (9) 46 | (9) I | (9) — | (9) Right Rear Speaker [+] Control | (9) 9 | (9) 0.75 | (9) WH | (9) 46 | (9) IV | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.35 | (11) GN | (11) 8579 | (11) III | (11) — | (11) Automotive Audio Bus A2B Serial Data 1 [-] | (11) 11 | (11) 0.35 | (11) GN | (11) 8579 | (11) VI | (11) — |
| (12) 12 | (12) 0.35 | (12) WH | (12) 8580 | (12) III | (12) — | (12) Automotive Audio Bus A2B Serial Data 1 [+] | (12) 12 | (12) 0.35 | (12) WH | (12) 8580 | (12) VI | (12) — |
| 13 | — | — | — | — | — | Not Occupied | 13 | — | — | — | — | — |
| (14) 14 | (14) 0.35 | (14) WH | (14) 4978 | (14) I | (14) — | (14) AUTOSAR CAN Bus [-] 2 Serial Data | (14) 14 | (14) 0.35 | (14) WH | (14) 4978 | (14) IV | (14) — |
| (15) 15 | (15) 0.5 | (15) YE / BK | (15) 117 | (15) I | (15) — | (15) Right Front Speaker [-] Control 1 | (15) 15 | (15) 0.5 | (15) YE / BK | (15) 117 | (15) IV | (15) — |
| (16) 16 | (16) 0.5 | (16) YE | (16) 200 | (16) I | (16) — | (16) Right Front Speaker 1 [+] Control | (16) 16 | (16) 0.5 | (16) YE | (16) 200 | (16) IV | (16) UQF |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.35 | (17) YE | (17) 6812 | (17) I | (17) — | (17) Out of Park Signal | (17) 17 | (17) 0.5 | (17) YE | (17) 6812 | (17) IV | (17) — |
| (18) 18 | (18) 0.5 | (18) VT / WH | (18) 639 | (18) I | (18) — | (18) Run/ Crank Ignition 1 Voltage | (18) 18 | (18) 0.5 | (18) VT / WH | (18) 639 | (18) IV | (18) — |
| (19) 19 | (19) 0.35 | (19) WH / YE | (19) 4634 | (19) I | (19) — | (19) HVAC Remote Enable Signal | (19) 19 | (19) 0.35 | (19) WH / YE | (19) 4634 | (19) IV | (19) — |
| (20) 20 | (20) 0.75 | (20) GN / BK | (20) 116 | (20) I | (20) — | (20) Left Rear Speaker [-] Control | (20) 20 | (20) 0.75 | (20) GN / BK | (20) 116 | (20) IV | (20) — |
| (21) 21 | (21) 0.75 | (21) GN | (21) 199 | (21) I | (21) — | (21) Left Rear Speaker [+] Control | (21) 21 | (21) 0.75 | (21) GN | (21) 199 | (21) IV | (21) — |
| 22 - 25 | — | — | — | — | — | Not Occupied | 22 - 25 | — | — | — | — | — |
| (26) 26 | (26) 0.35<br>(26) 0.5 | (26) BU / YE<br>(26) BU / YE | (26) 4979<br>(26) 4979 | (26) I<br>(26) I | (26) - UGN<br>(26) UGN | (26) AUTOSAR CAN Bus [+] 2 Serial Data<br>(26) AUTOSAR CAN Bus [+] 2 Serial Data | (26) 26 | (26) 0.35<br>(26) 0.5 | (26) BU / YE<br>(26) BU / YE | (26) 4979<br>(26) 4979 | (26) IV<br>(26) IV | (26) - UGN<br>(26) UGN |
| 27 - 29 | — | — | — | — | — | Not Occupied | 27 - 29 | — | — | — | — | — |
| (30) 30 | (30) 0.35 | (30) BU / RD | (30) 460 | (30) II | (30) — | (30) Engine Control Sensors 5 Volt Reference 1 | (30) 30 | (30) 0.5 | (30) BU / RD | (30) 460 | (30) V | (30) — |
| (31) 31 | (31) 0.35 | (31) BN | (31) 10515 | (31) II | (31) — | (31) Electronic Transmission Range Select Shifter Position Sensor 1 Signal | (31) 31 | (31) 0.5 | (31) BN | (31) 10515 | (31) V | (31) — |
| (32) 32 | (32) 0.35 | (32) BK / YE | (32) 548 | (32) II | (32) — | (32) Engine Control Sensors Low Reference 1 | (32) 32 | (32) 0.5 | (32) BK / YE | (32) 548 | (32) V | (32) — |
| (33) 33 | (33) 0.35 | (33) WH / RD | (33) 480 | (33) II | (33) — | (33) Engine Control Vehicle Sensors 5 Volt Reference 1 | (33) 33 | (33) 0.5 | (33) WH / RD | (33) 480 | (33) V | (33) — |
| 34 - 35 | — | — | — | — | — | Not Occupied | 34 - 35 | — | — | — | — | — |
| (36) 36 | (36) 0.35 | (36) GY | (36) 10518 | (36) II | (36) — | (36) Electronic Transmission Range Select Shifter Position Sensor 2 Signal | (36) 36 | (36) 0.5 | (36) GY | (36) 10518 | (36) V | (36) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (37) 37 | (37) 0.35 | (37) BK / GN | (37) 580 | (37) II | (37) — | (37) Engine Control Sensors Low Reference 2 | (37) 37 | (37) 0.5 | (37) BK / GN | (37) 580 | (37) V | (37) — |
| (38) 38 | (38) 0.75 | (38) WH / YE | (38) 1853 | (38) II | (38) — | (38) Right Front Midrange Speaker [+] Control | (38) 38 | (38) 0.75 | (38) WH / YE | (38) 1853 | (38) V | (38) — |
| 39 | — | — | — | — | — | Not Occupied | 39 | — | — | — | — | — |
| (40) 40 | (40) 0.35 | (40) BU / YE | (40) 4979 | (40) II | (40) — | (40) AUTOSAR CAN Bus [+] 2 Serial Data | (40) 40 | (40) 0.35 | (40) BU / YE | (40) 4979 | (40) V | (40) — |
| (41) 41 | (41) 0.35 | (41) WH | (41) 4978 | (41) II | (41) — | (41) AUTOSAR CAN Bus [-] 2 Serial Data | (41) 41 | (41) 0.35 | (41) WH | (41) 4978 | (41) V | (41) — |
| 42 | — | — | — | — | — | Not Occupied | 42 | — | — | — | — | — |
| (43) 43 | (43) 0.75 | (43) BN / BK | (43) 1953 | (43) II | (43) — | (43) Right Front Midrange Speaker [-] Control | (43) 43 | (43) 0.75 | (43) BN / BK | (43) 1953 | (43) V | (43) — |
| 44 - 50 | — | — | — | — | — | Not Occupied | 44 - 50 | — | — | — | — | — |
| (51) 51 | (51) 0.35 | (51) BU / VT | (51) 807 | (51) I | (51) — | (51) Ignition Off/Accessory Ignition Voltage | (51) 51 | (51) 0.35 | (51) BU / VT | (51) 807 | (51) IV | (51) — |
| 52 - 59 | — | — | — | — | — | Not Occupied | 52 - 59 | — | — | — | — | — |
| (60) 60 | (60) 0.35 | (60) YE / WH | (60) 1690 | (60) I | (60) — | (60) Mirror Dimming Signal | (60) 60 | (60) 0.35 | (60) YE / WH | (60) 1690 | (60) IV | (60) — |
| (61) 61 | (61) 0.35 | (61) BK / YE | (61) 1691 | (61) I | (61) — | (61) Automatic Day/Night Mirror Low Reference | (61) 61 | (61) 0.35 | (61) BK / YE | (61) 1691 | (61) IV | (61) — |
| (62) 62 | (62) 0.5 | (62) WH / GY | (62) 4104 | (62) I | (62) — | (62) AUTOSAR CAN Bus [-] 8 Serial Data | (62) 62 | (62) 0.5 | (62) WH / GY | (62) 4104 | (62) IV | (62) — |
| (63) 63 | (63) 0.5 | (63) BU / GY | (63) 4105 | (63) I | (63) — | (63) AUTOSAR CAN Bus [+] 8 Serial Data | (63) 63 | (63) 0.5 | (63) BU / GY | (63) 4105 | (63) IV | (63) — |
| (64) 64 | (64) 0.35 | (64) GN / WH | (64) 4622 | (64) I | (64) — | (64) Engine Control Module LIN Bus 2 | (64) 64 | (64) 0.35 | (64) GN / WH | (64) 4622 | (64) IV | (64) — |
| 65 | — | — | — | — | — | Not Occupied | 65 | — | — | — | — | — |
| (66) 66 | (66) 0.35 | (66) WH / GY | (66) 4104 | (66) I | (66) — | (66) AUTOSAR CAN Bus [-] 8 Serial Data | (66) 66 | (66) 0.35 | (66) WH / GY | (66) 4104 | (66) IV | (66) — |
| (67) 67 | (67) 0.35 | (67) BU / GY | (67) 4105 | (67) I | (67) — | (67) AUTOSAR CAN Bus [+] 8 Serial Data | (67) 67 | (67) 0.35 | (67) BU / GY | (67) 4105 | (67) IV | (67) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (68) 68 | (68) 0.75 | (68) G Y / YE | (68) 88 97 | (68) I | (68) — | (68) Police Relay 3 Control | (68) 68 | (68) 0.75 | (68) G Y / YE | (68) 88 97 | (68) IV | (68) — |
| 69 - 74 | — | — | — | — | — | Not Occupied | 69 - 74 | — | — | — | — | — |
| (75) 75 | (75) 0.35 | (75) G N / GY | (75) 11 023 | (75) I | (75) — | (75) Image Processing Module LIN Bus 1 | (75) 75 | (75) 0.35 | (75) G N / GY | (75) 11 023 | (75) IV | (75) — |
| (76) 76 | (76) 0.35 | (76) G Y / GN | (76) 40 83 | (76) I | (76) — | (76) Retained Accessory Power Relay 2 Coil Control | (76) 76 | (76) 0.35 | (76) G Y / GN | (76) 40 83 | (76) IV | (76) — |

### X211 Instrument Panel Wiring Harness to Body Wiring Harness



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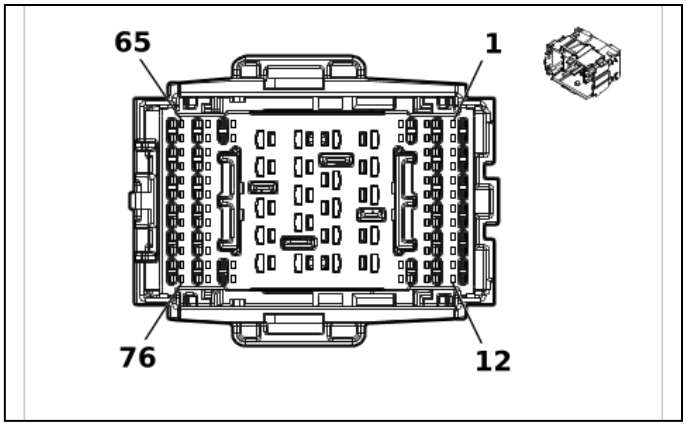


6171465

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6099-0188
- Service Connector: 85026856
- Description: 76-Way F 1.2 Sumitomo, 2.8 YESC Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0184
- Service Connector: 13549030
- Description: 76-Way M 1.2 Sumitomo, 2.8 YESC Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |
| III | 84616651 | J-35616-13 (BU) | J-38125-215A |
| IV | 84888592 | J-35616-5 (PU) | J-38125-11A |

### X211 Instrument Panel Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5<br>(1) 0.35 | (1) BU / VT<br>(1) BN / BK | (1) 8900<br>(1) 4996 | (1) I<br>(1) I | (1) 5W4 / 9C1<br>(1) AZ3 | (1) Police Microphone Input Signal<br>(1) Immobilizer Antenna Signal [+] | (1) 1 | (1) 0.5<br>(1) 0.5 | (1) BU / VT<br>(1) BN / BK | (1) 8900<br>(1) 4996 | (1) III<br>(1) III | (1) 5W4 / 9C1<br>(1) AZ3 |
| (2) 2 | (2) 0.35<br>(2) 0.35 | (2) BN / GY<br>(2) WH / GY | (2) 8021<br>(2) 4997 | (2) I<br>(2) I | (2) 5W4 / 9C1<br>(2) AZ3 | (2) Police Microphone Enable Signal<br>(2) Immobilizer Antenna Low Signal | (2) 2 | (2) 0.35<br>(2) 0.5 | (2) BN / GY<br>(2) WH / GY | (2) 8021<br>(2) 4997 | (2) III<br>(2) III | (2) 5W4 / 9C1<br>(2) AZ3 |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 0.5 | (4) BN / WH | (4) 3895 | (4) I | (4) — | (4) Roof Rail Air Bag Disable Switch Low Reference | (4) 4 | (4) 0.5 | (4) BN / WH | (4) 3895 | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / GY | (5) 4104 | (5) I | (5) — | (5) AUTOSAR CAN Bus [-] 8 Serial Data | (5) 5 | (5) 0.35 | (5) WH / GY | (5) 4104 | (5) III | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / GY | (6) 4105 | (6) I | (6) — | (6) AUTOSAR CAN Bus [+] 8 Serial Data | (6) 6 | (6) 0.35 | (6) BU / GY | (6) 4105 | (6) III | (6) — |
| (7) 7 | (7) 0.35 | (7) GY | (7) 1715 | (7) I | (7) — | (7) Windshield Wiper Switch High Signal | (7) 7 | (7) 0.35 | (7) GY | (7) 1715 | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) WH | (8) 4978 | (8) I | (8) — | (8) AUTOSAR CAN Bus [-] 2 Serial Data | (8) 8 | (8) 0.35 | (8) WH | (8) 4978 | (8) III | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / YE | (9) 4979 | (9) I | (9) — | (9) AUTOSAR CAN Bus [+] 2 Serial Data | (9) 9 | (9) 0.35 | (9) BU / YE | (9) 4979 | (9) III | (9) — |
| (10) 10 | (10) 0.75 | (10) GN / YE | (10) 8896 | (10) I | (10) — | (10) Police Relay 2 Control | (10) 10 | (10) 0.75 | (10) GN / YE | (10) 8896 | (10) III | (10) — |
| (11) 11 | (11) 0.35 | (11) WH | (11) 4986 | (11) I | (11) — | (11) AUTOSAR CAN Bus [-] 1 Serial Data | (11) 11 | (11) 0.5 | (11) WH | (11) 4986 | (11) III | (11) — |
| (12) 12 | (12) 0.35 | (12) BU | (12) 4987 | (12) I | (12) — | (12) AUTOSAR CAN Bus [+] 1 Serial Data | (12) 12 | (12) 0.5 | (12) BU | (12) 4987 | (12) III | (12) — |
| 13 | — | — | — | — | — | Not Occupied | 13 | — | — | — | — | — |
| (14) 14 | (14) 0.5 | (14) GN / YE | (14) 2731 | (14) I | (14) — | (14) Brake System Control Module LIN Bus 1 | (14) 14 | (14) 0.5 | (14) GN / YE | (14) 2731 | (14) III | (14) — |
| (15) 15 | (15) 0.35 | (15) GN / VT | (15) 5199 | (15) I | (15) — | (15) Run/ Crank Relay Coil Control | (15) 15 | (15) 0.5 | (15) GN / VT | (15) 5199 | (15) III | (15) — |
| 16 | — | — | — | — | — | Not Occupied | 16 | — | — | — | — | — |

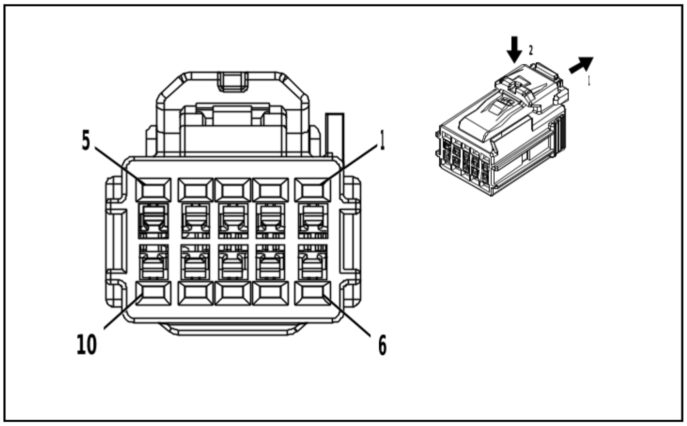
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.5 | (17) BU / WH | (17) 3119 | (17) I | (17) — | (17) Roof Rail Air Bag Disable Switch Signal | (17) 17 | (17) 0.5 | (17) BU / WH | (17) 3119 | (17) III | (17) — |
| (18) 18 | (18) 0.35 | (18) GN / BN | (18) 2853 | (18) I | (18) — | (18) Body Control Module LIN Bus 7 | (18) 18 | (18) 0.35 | (18) GN / BN | (18) 2853 | (18) III | (18) — |
| (19) 19 | (19) 0.35 | (19) WH | (19) 4976 | (19) I | (19) — | (19) AUTOSAR CAN Bus [-] 3 Serial Data | (19) 19 | (19) 0.5 | (19) WH | (19) 4976 | (19) III | (19) — |
| (20) 20 | (20) 0.35 | (20) BU / BK | (20) 4977 | (20) I | (20) — | (20) AUTOSAR CAN Bus [+] 3 Serial Data | (20) 20 | (20) 0.5 | (20) BU / BK | (20) 4977 | (20) III | (20) — |
| (21) 21 | (21) 0.5 | (21) OG / VT | (21) 3026 | (21) I | (21) — | (21) Passenger Instrument Panel Air Bag Stage 2 Low Control | (21) 21 | (21) 0.5 | (21) OG / VT | (21) 3026 | (21) III | (21) — |
| (22) 22 | (22) 0.5 | (22) GY / OG | (22) 3027 | (22) I | (22) — | (22) Passenger Instrument Panel Air Bag Stage 2 High Control | (22) 22 | (22) 0.5 | (22) GY / OG | (22) 3027 | (22) III | (22) — |
| (23) 23 | (23) 0.5 | (23) WH | (23) 4986 | (23) I | (23) — | (23) AUTOSAR CAN Bus [-] 1 Serial Data | (23) 23 | (23) 0.5 | (23) WH | (23) 4986 | (23) III | (23) — |
| (24) 24 | (24) 0.5 | (24) BU | (24) 4987 | (24) I | (24) — | (24) AUTOSAR CAN Bus [+] 1 Serial Data | (24) 24 | (24) 0.5 | (24) BU | (24) 4987 | (24) III | (24) — |
| 25 | — | — | — | — | — | Not Occupied | 25 | — | — | — | — | — |
| (26) 26 | (26) 0.35<br>(26) 0.5 | (26) GN / WH<br>(26) GN / WH | (26) 24<br>(26) 24 | (26) I<br>(26) I | (26) - ( DD8 / DRZ)<br>(26) DD8 / DRZ | (26) Backup Lamp Control<br>(26) Backup Lamp Control | (26) 26 | (26) 0.5 | (26) GN / WH | (26) 24 | (26) III | (26) — |
| 27 - 29 | — | — | — | — | — | Not Occupied | 27 - 29 | — | — | — | — | — |
| (30) 30 | (30) 1.5 | (30) BK / WH | (30) 1451 | (30) II | (30) — | (30) Signal Ground | (30) 30 | (30) 2 | (30) BK / WH | (30) 1451 | (30) IV | (30) — |
| (31) 31 | (31) 0.35 | (31) BU / WH | (31) 4985 | (31) II | (31) — | (31) AUTOSAR CAN Bus [+] 5 Serial Data | (31) 31 | (31) 0.35 | (31) BU / WH | (31) 4985 | (31) IV | (31) — |
| (32) 32 | (32) 0.35 | (32) BU / YE | (32) 4984 | (32) II | (32) — | (32) AUTOSAR CAN Bus [-] 5 Serial Data | (32) 32 | (32) 0.35 | (32) BU / YE | (32) 4984 | (32) IV | (32) — |
| (33) 33 | (33) 0.5 | (33) BN / BU | (33) 4892 | (33) II | (33) — | (33) Auxiliary Battery Relay Control | (33) 33 | (33) 0.5 | (33) BN / BU | (33) 4892 | (33) IV | (33) — |
| (34) 34 | (34) 2.5 | (34) RD / VT | (34) 1242 | (34) II | (34) — | (34) Battery Positive Voltage | (34) 34 | (34) 2.5 | (34) RD / VT | (34) 1242 | (34) IV | (34) — |
| 35 | — | — | — | — | — | Not Occupied | 35 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (36) 36 | (36) 0.35 | (36) GN / WH | (36) 7530 | (36) II | (36) — | (36) Driver Seat Adjuster Memory Module LIN Bus 1 | (36) 36 | (36) 0.5 | (36) GN / WH | (36) 7530 | (36) IV | (36) — |
| 37 | — | — | — | — | — | Not Occupied | 37 | — | — | — | — | — |
| (38) 38 | (38) 0.35<br>(38) 0.75 | (38) WH / VT<br>(38) YE / WH | (38) 6821<br>(38) 1860 | (38) II<br>(38) II | (38) 5W4 / 9C1<br>(38) AZ3 | (38) Surveillance Switch Signal<br>(38) Front Center Speaker [+] Control | (38) 38 | (38) 0.75<br>(38) 1 | (38) WH / VT<br>(38) YE / WH | (38) 6821<br>(38) 1860 | (38) IV<br>(38) IV | (38) 5W4 / 9C1<br>(38) AZ3 |
| 39 | — | — | — | — | — | Not Occupied | 39 | — | — | — | — | — |
| (40) 40 | (40) 1 | (40) RD / GN | (40) 8911 | (40) II | (40) — | (40) Police Select Control 1 | (40) 40 | (40) 1 | (40) RD / GN | (40) 8911 | (40) IV | (40) — |
| 41 - 42 | — | — | — | — | — | Not Occupied | 41 - 42 | — | — | — | — | — |
| (43) 43 | (43) 1<br>(43) 0.75 | (43) RD / YE<br>(43) BU / YE | (43) 8914<br>(43) 1960 | (43) II<br>(43) II | (43) 5W4 / 9C1<br>(43) AZ3 | (43) Police Select Control 4<br>(43) Front Center Speaker [-] Control | (43) 43 | (43) 1<br>(43) 1 | (43) RD / YE<br>(43) BU / YE | (43) 8914<br>(43) 1960 | (43) IV<br>(43) IV | (43) 5W4 / 9C1<br>(43) AZ3 |
| (44) 44 | (44) 0.75 | (44) BU / VT | (44) 1857 | (44) II | (44) — | (44) Left Front Midrange Speaker [+] Control | (44) 44 | (44) 0.75 | (44) BU / VT | (44) 1857 | (44) IV | (44) — |
| (45) 45 | (45) 0.75 | (45) BU / BN | (45) 1957 | (45) II | (45) — | (45) Left Front Midrange Speaker [-] Control | (45) 45 | (45) 0.75 | (45) BU / BN | (45) 1957 | (45) IV | (45) — |
| 46 | — | — | — | — | — | Not Occupied | 46 | — | — | — | — | — |
| (47) 47 | (47) 0.35 | (47) GN / BN | (47) 507 | (47) II | (47) — | (47) Wait To Start Indicator Control | (47) 47 | (47) 0.35 | (47) GN / BN | (47) 507 | (47) IV | (47) — |
| (48) 48 | (48) 2.5 | (48) BU | (48) 47 | (48) II | (48) — | (48) Trailer Auxiliary Control | (48) 48 | (48) 2.5 | (48) BU | (48) 47 | (48) IV | (48) — |
| 49 - 50 | — | — | — | — | — | Not Occupied | 49 - 50 | — | — | — | — | — |
| (51) 51 | (51) 0.5 | (51) YE | (51) 6817 | (51) I | (51) — | (51) LED Backlight Dimming Control 1 | (51) 51 | (51) 0.5 | (51) YE | (51) 6817 | (51) III | (51) — |
| 52 - 54 | — | — | — | — | — | Not Occupied | 52 - 54 | — | — | — | — | — |
| (55) 55 | (55) 0.5 | (55) BN / BU | (55) 118 | (55) I | (55) — | (55) Left Front Speaker [-] Control 1 | (55) 55 | (55) 0.5 | (55) BN / BU | (55) 118 | (55) III | (55) — |

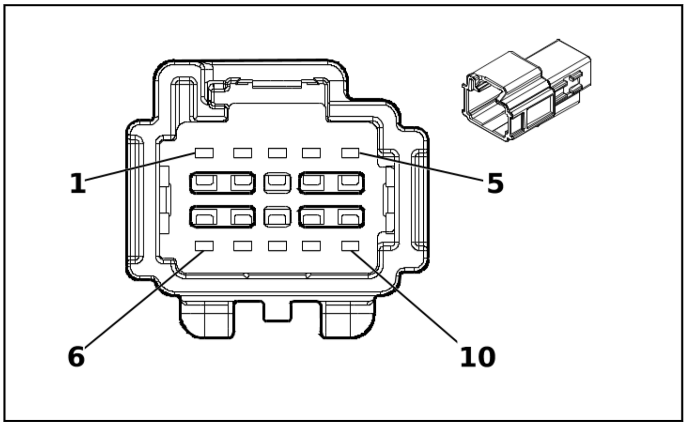
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (56) 56 | (56) 0.5 | (56) YE / OG | (56) 3025 | (56) I | (56) — | (56) Passenger Instrument Panel Air Bag Stage 1 High Control | (56) 56 | (56) 0.5 | (56) YE / OG | (56) 3025 | (56) III | (56) — |
| (57) 57 | (57) 0.35 | (57) GY | (57) 728 | (57) I | (57) — | (57) Security Indicator Control | (57) 57 | (57) 0.5 | (57) GY | (57) 728 | (57) III | (57) — |
| (58) 58 | (58) 0.5 | (58) VT / WH | (58) 239 | (58) I | (58) — | (58) Run/ Crank Ignition 1 Voltage | (58) 58 | (58) 0.5 | (58) VT / WH | (58) 239 | (58) III | (58) — |
| (59) 59 | (59) 0.35 | (59) GY / VT | (59) 8022 | (59) I | (59) — | (59) Police Roof Lamp Control | (59) 59 | (59) 0.5 | (59) GY / VT | (59) 8022 | (59) III | (59) — |
| 60 | — | — | — | — | — | Not Occupied | 60 | — | — | — | — | — |
| (61) 61 | (61) 0.5 | (61) BU / WH | (61) 8899 | (61) I | (61) — | (61) Police Microphone Data Signal | (61) 61 | (61) 0.5 | (61) BU / WH | (61) 8899 | (61) III | (61) — |
| (62) 62 | (62) 0.75 | (62) VT / YE | (62) 8898 | (62) I | (62) — | (62) Police Relay 4 Control | (62) 62 | (62) 0.75 | (62) VT / YE | (62) 8898 | (62) III | (62) — |
| (63) 63 | (63) 0.5 | (63) OG / VT | (63) 3021 | (63) I | (63) — | (63) Steering Wheel Air Bag Stage 1 High Control | (63) 63 | (63) 0.5 | (63) OG / VT | (63) 3021 | (63) III | (63) — |
| (64) 64 | (64) 0.5 | (64) BN / OG | (64) 3020 | (64) I | (64) — | (64) Steering Wheel Air Bag Stage 1 Low Control | (64) 64 | (64) 0.5 | (64) BN / OG | (64) 3020 | (64) III | (64) — |
| (65) 65 | (65) 0.5 | (65) OG / GN | (65) 3023 | (65) I | (65) — | (65) Steering Wheel Air Bag Stage 2 High Control | (65) 65 | (65) 0.5 | (65) OG / GN | (65) 3023 | (65) III | (65) — |
| (66) 66 | (66) 0.5 | (66) WH / OG | (66) 3022 | (66) I | (66) — | (66) Steering Wheel Air Bag Stage 2 Low Control | (66) 66 | (66) 0.5 | (66) WH / OG | (66) 3022 | (66) III | (66) — |
| (67) 67 | (67) 0.5 | (67) BU | (67) 201 | (67) I | (67) — | (67) Left Front Speaker 1 [+] Control | (67) 67 | (67) 0.5 | (67) BU | (67) 201 | (67) III | (67) — |
| (68) 68 | (68) 0.5 | (68) OG / WH | (68) 3024 | (68) I | (68) — | (68) Passenger Instrument Panel Air Bag Stage 1 Low Control | (68) 68 | (68) 0.5 | (68) OG / WH | (68) 3024 | (68) III | (68) — |
| 69 | — | — | — | — | — | Not Occupied | 69 | — | — | — | — | — |
| (70) 70 | (70) 0.75 | (70) BU / YE | (70) 8895 | (70) I | (70) — | (70) Police Relay 1 Control | (70) 70 | (70) 0.75 | (70) BU / YE | (70) 8895 | (70) III | (70) — |
| (71) 71 | (71) 0.35 | (71) WH | (71) 4100 | (71) I | (71) — | (71) AUTOSAR CAN Bus [-] 4 Serial Data | (71) 71 | (71) 0.35 | (71) WH | (71) 4100 | (71) III | (71) — |
| (72) 72 | (72) 0.35 | (72) BU / VT | (72) 4101 | (72) I | (72) — | (72) AUTOSAR CAN Bus [+] 4 Serial Data | (72) 72 | (72) 0.35 | (72) BU / VT | (72) 4101 | (72) III | (72) — |
| 73 | — | — | — | — | — | Not Occupied | 73 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (74) 74 | (74) 0.35 | (74) GN / BU | (74) 2733 | (74) I | (74) — | (74) Brake System Control Module LIN Bus 2 | (74) 74 | (74) 0.75 | (74) GN / BU | (74) 2733 | (74) III | (74) — |
| (75) 75 | (75) 0.75 | (75) RD / GY | (75) 8912 | (75) I | (75) — | (75) Police Select Control 2 | (75) 75 | (75) 0.75 | (75) RD / GY | (75) 8912 | (75) III | (75) — |
| (76) 76 | (76) 0.75 | (76) RD / WH | (76) 8913 | (76) I | (76) — | (76) Police Select Control 3 | (76) 76 | (76) 0.75 | (76) RD / WH | (76) 8913 | (76) III | (76) — |

### X214 Instrument Panel Wiring Harness to Body Wiring Harness



4254030



5355759

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-9004
- Service Connector: 13532428
- Description: 10-Way F 1.2 Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9079
- Service Connector: 13530136
- Description: 10-Way M 1.2 MCON Series( BK)

## Terminal Part Information

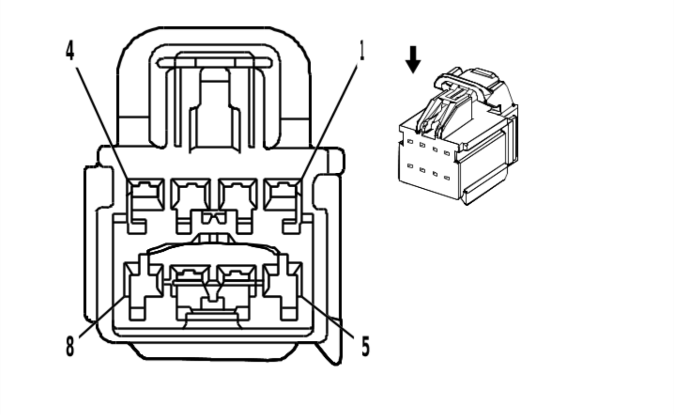
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Service by Cable | J-35616-12 (BU) | J-381225-215A |
| II | Service by Cable | J-35616-13 (BU) | J-381225-215A |

## X214 Instrument Panel Wiring Harness to Body Wiring Harness

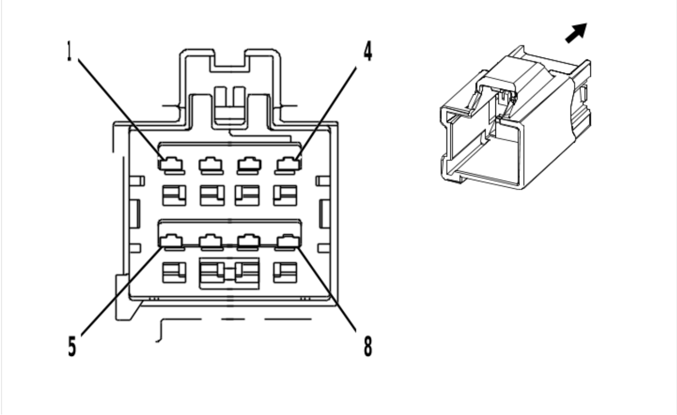
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) VT / WH | (1) 7213 | (1) I | (1) — | (1) Ethernet Bus 5 [+] | (1) 1 | (1) 0.35 | (1) VT / WH | (1) 7213 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) VT | (2) 7212 | (2) I | (2) — | (2) Ethernet Bus 5 [-] | (2) 2 | (2) 0.35 | (2) VT | (2) 7212 | (2) II | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 0.35 | (4) BN | (4) 7208 | (4) I | (4) — | (4) Ethernet Bus 3 [-] | (4) 4 | (4) 0.35 | (4) BN | (4) 7208 | (4) II | (4) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.35 | (5) BN / WH | (5) 7209 | (5) I | (5) — | (5) Ethernet Bus 3 [+] | (5) 5 | (5) 0.35 | (5) BN / WH | (5) 7209 | (5) II | (5) — |
| 6 - 10 | — | — | — | — | — | Not Occupied | 6 - 10 | — | — | — | — | — |

### X215 Instrument Panel Wiring Harness to Instrument Panel Wiring Harness



1849808



1849807

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7283-3441-40
- Service Connector: 19153166
- Description: 8-Way F 1.5 Kaizen Series( L-GY)

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7282-3441-40
- Service Connector: 19153162
- Description: 8-Way M 1.5 Kaizen Series( L-GY)

## Terminal Part Information

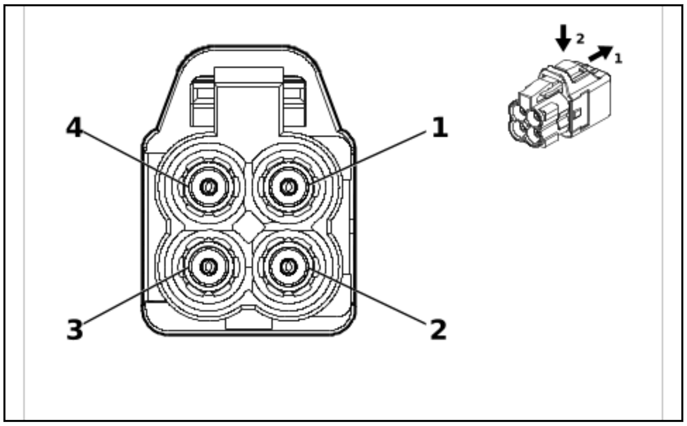
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X215 Instrument Panel Wiring Harness to Instrument Panel Wiring Harness

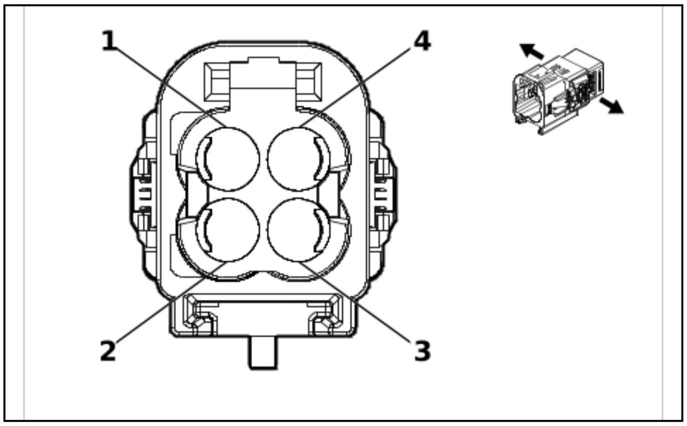
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU | (1) 201 | (1) I | (1) — | (1) Left Front Speaker 1 [+] Control | (1) 1 | (1) 0.5 | (1) BU | (1) 201 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE | (2) 200 | (2) I | (2) — | (2) Right Front Speaker 1 [+] Control | (2) 2 | (2) 0.5 | (2) YE | (2) 200 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GN | (3) 199 | (3) I | (3) — | (3) Left Rear Speaker [+] Control | (3) 3 | (3) 0.75 | (3) GN | (3) 199 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) WH | (4) 46 | (4) I | (4) — | (4) Right Rear Speaker [+] Control | (4) 4 | (4) 0.75 | (4) WH | (4) 46 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) BN / BU | (5) 118 | (5) I | (5) — | (5) Left Front Speaker [-] Control 1 | (5) 5 | (5) 0.5 | (5) BN / BU | (5) 118 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) YE / BK | (6) 117 | (6) I | (6) — | (6) Right Front Speaker [-] Control 1 | (6) 6 | (6) 0.5 | (6) YE / BK | (6) 117 | (6) II | (6) — |
| (7) 7 | (7) 0.75 | (7) GN / BK | (7) 116 | (7) I | (7) — | (7) Left Rear Speaker [-] Control | (7) 7 | (7) 0.75 | (7) GN / BK | (7) 116 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) BU / BK | (8) 115 | (8) I | (8) — | (8) Right Rear Speaker [-] Control | (8) 8 | (8) 0.75 | (8) BU / BK | (8) 115 | (8) II | (8) — |

### X216 Instrument Panel Wiring Harness to Body Wiring Harness



6759178



6002390

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 13563024
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( GN)

**Connector Part Information**
- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13520459
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way M Mini Coax Type( GN)

## Terminal Part Information

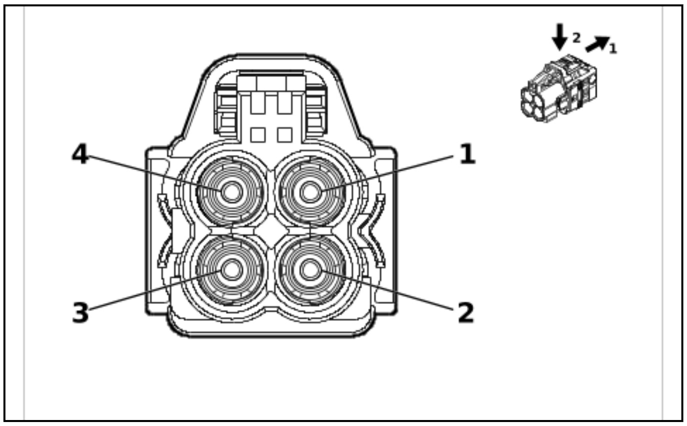
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X216 Instrument Panel Wiring Harness to Body Wiring Harness

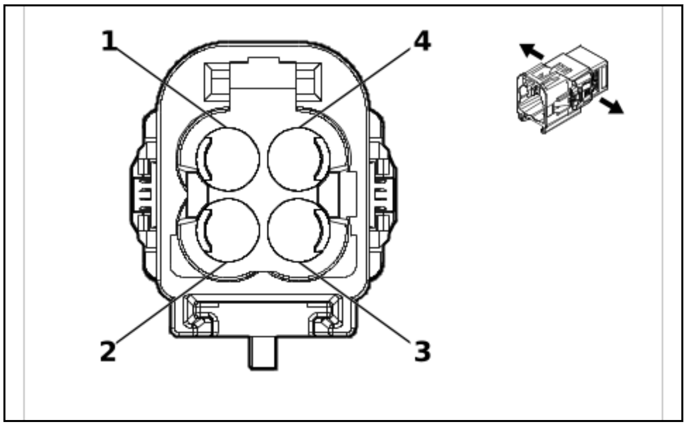
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | — | — | Not Occupied | 1 - 4 | — | — | — | — | — |
| (1) 1 | (1) 0 | (1) Coax Cable | (1) 4722 | (1) I | (1) — | (1) Frontview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) 1 | (1) 0 | (1) Coax Cable | (1) 4722 | (1) II | (1) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (2) 2 | (2) 0 | (2) Coax Cable | (2) 7886 | (2) I | (2) — | (2) Trailer 2 Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) 2 | (2) 0 | (2) Coax Cable | (2) 7886 | (2) II | (2) — |
| (3) 3 | (3) 0 | (3) Coax Cable | (3) 2421 | (3) I | (3) — | (3) Trailer Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (3) 3 | (3) 0 | (3) Coax Cable | (3) 2421 | (3) II | (3) — |
| (4) 4 | (4) 0 | (4) Coax Cable | (4) 4723 | (4) I | (4) — | (4) Video Processing Module LVDS (Low Voltage Differential Signaling) Coaxial Signal | (4) 4 | (4) 0 | (4) Coax Cable | (4) 4723 | (4) II | (4) — |

### X217 Instrument Panel Wiring Harness to Body Wiring Harness



6904492



6186622

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: AMZW25-001-D
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( VT)

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: AMZ040-C00-D
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way M Mini Coax Type( VT)

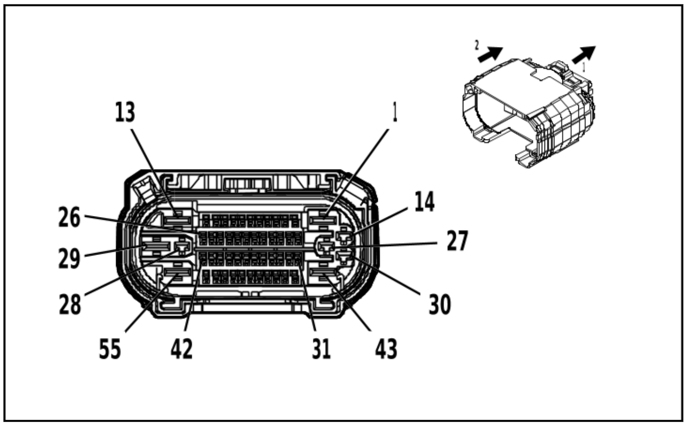
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

### X217 Instrument Panel Wiring Harness to Body Wiring Harness

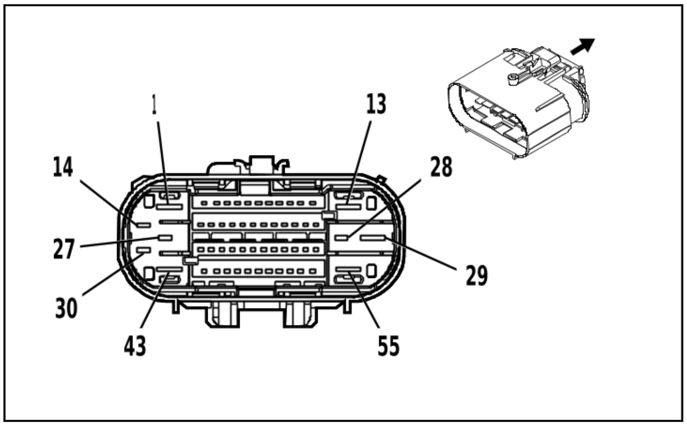
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0<br>(1) 0 | (1) Coax Cable<br>(1) Coax Cable | (1) 4726<br>(1) 4721 | (1) I<br>(1) I | (1) UKL<br>(1) - UKL | (1) Driver Monitoring System Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal<br>(1) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) 1 | (1) 0<br>(1) 0 | (1) Coax Cable<br>(1) Coax Cable | (1) 4726<br>(1) 4721 | (1) II<br>(1) II | (1) UKL<br>(1) - UKL |
| (2) 2 | (2) 0 | (2) Coax Cable | (2) 4725 | (2) I | (2) — | (2) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) 2 | (2) 0 | (2) Coax Cable | (2) 4725 | (2) II | (2) — |
| (3) 3 | (3) 0 | (3) Coax Cable | (3) 4724 | (3) I | (3) — | (3) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (3) 3 | (3) 0 | (3) Coax Cable | (3) 4724 | (3) II | (3) — |

### X225A Front Floor Console Wiring Harness to Body Wiring Harness



4992168

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 35016652
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)



4993301

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13530982
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-35 (VT) | No Tool Required |
| IV | Not required | J-35616-42 (RD) | No Tool Required |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84867141 | J-35616-13 (BU) | J-38125-553 |
| VIII | 84992391 | J-35616-5 (PU) | J-38125-36 |

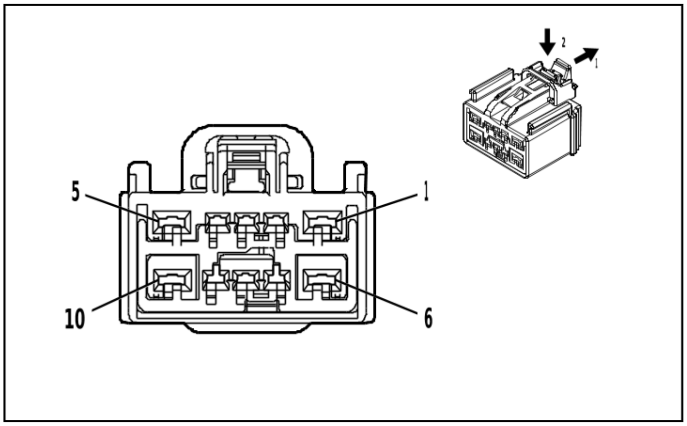
## X225A Front Floor Console Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 1351 | (1) IV | (1) — | (1) Signal Ground | (1) 1 | (1) 0.5 | (1) BK / WH | (1) 1351 | (1) V | (1) — |
| (2) 2 | (2) 0.75 | (2) BK / WH | (2) 1451 | (2) II | (2) — | (2) Signal Ground | (2) 2 | (2) 0.75 | (2) BK / WH | (2) 1451 | (2) VI | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) II | (3) — | (3) AC Power Outlet Sensor High Reference | (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) VI | (3) — |
| (4) 4 | (4) 0.5<br>(4) 0.75 | (4) RD / VT<br>(4) RD / VT | (4) 6340<br>(4) 6340 | (4) II<br>(4) II | (4) ( ( BOY / BOR) - K7A)<br>(4) K7A-( BOR/ BOY) | (4) Battery Positive Voltage<br>(4) Battery Positive Voltage | (4) 4 | (4) 0.5 | (4) RD / VT | (4) 6340 | (4) VI | (4) — |
| 5 - 6 | — | — | — | — | — | Not Occupied | 5 - 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5<br>(7) 0.75 | (7) RD / WH<br>(7) RD | (7) 7240<br>(7) 7240 | (7) II<br>(7) II | (7) ( ( BOY / BOR) - K7A)<br>(7) K7A-( BOR/ BOY) | (7) Battery Positive Voltage<br>(7) Battery Positive Voltage | (7) 7 | (7) 0.35 | (7) RD / WH | (7) 7240 | (7) VI | (7) — |
| 8 - 13 | — | — | — | — | — | Not Occupied | 8 - 13 | — | — | — | — | — |
| (14) 14 | (14) 0.5 | (14) VT | (14) 4701 | (14) III | (14) — | (14) Retained Accessory Power Control | (14) 14 | (14) 0.5 | (14) VT | (14) 4701 | (14) VIII | (14) — |
| (15) 15 | (15) 0.5 | (15) GN / BK | (15) 2211 | (15) II | (15) — | (15) Rear Blower Motor Speed Control | (15) 15 | (15) 0.5 | (15) GN / BK | (15) 2211 | (15) VI | (15) — |
| 16 - 19 | — | — | — | — | — | Not Occupied | 16 - 19 | — | — | — | — | — |
| (20) 20 | (20) 0.35 | (20) GN / BK | (20) 2738 | (20) I | (20) — | (20) Near Field Communication Module LIN Bus 1 | (20) 20 | (20) 0.35 | (20) GN / BK | (20) 2738 | (20) VI | (20) — |

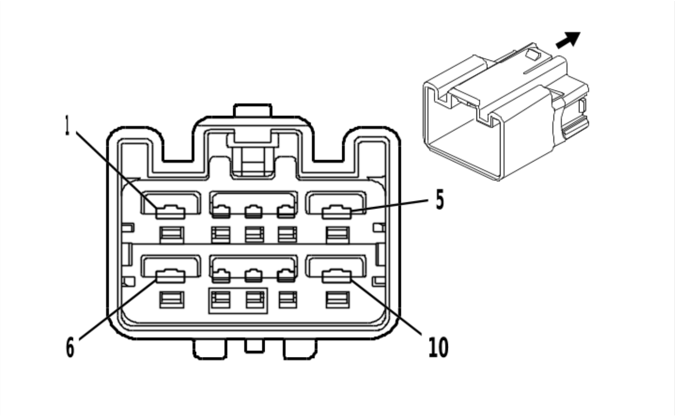
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (21) 21 | (21) 0.5 | (21) WH / YE | (21) 11325 | (21) II | (21) — | (21) Virtual Key Private CAN Bus [-] Serial Data | (21) 21 | (21) 0.5 | (21) WH / YE | (21) 11325 | (21) VI | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / BN | (22) 11326 | (22) II | (22) — | (22) Virtual Key Private CAN Bus [+] Serial Data | (22) 22 | (22) 0.5 | (22) BU / BN | (22) 11326 | (22) VI | (22) — |
| 23 - 26 | — | — | — | — | — | Not Occupied | 23 - 26 | — | — | — | — | — |
| (27) 27 | (27) 0.5 | (27) RD / BN | (27) 7540 | (27) III | (27) — | (27) Battery Positive Voltage | (27) 27 | (27) 0.5 | (27) RD / BN | (27) 7540 | (27) VIII | (27) — |
| (28) 28 | (28) 1 | (28) RD / VT | (28) 8640 | (28) III | (28) UW9 | (28) Battery Positive Voltage | (28) 28 | (28) 1 | (28) RD / VT | (28) 8640 | (28) VIII | (28) — |
| 29 - 34 | — | — | — | — | — | Not Occupied | 29 - 34 | — | — | — | — | — |
| (35) 35 | (35) 0.75 | (35) BU / BN | (35) 6807 | (35) II | (35) — | (35) DC/AC Inverter Control | (35) 35 | (35) 0.75 | (35) BU / BN | (35) 6807 | (35) VI | (35) — |
| 36 - 37 | — | — | — | — | — | Not Occupied | 36 - 37 | — | — | — | — | — |
| (38) 38 | (38) 0.5 | (38) BU / YE | (38) 4984 | (38) II | (38) UW9 | (38) AUTOSAR CAN Bus [-] 5 Serial Data | (38) 38 | (38) 0.5 | (38) BU / YE | (38) 4984 | (38) VI | (38) — |
| (39) 39 | (39) 0.5 | (39) BU / WH | (39) 4985 | (39) II | (39) UW9 | (39) AUTOSAR CAN Bus [+] 5 Serial Data | (39) 39 | (39) 0.5 | (39) BU / WH | (39) 4985 | (39) VI | (39) — |
| (40) 40 | (40) 0.5 | (40) YE | (40) 6817 | (40) II | (40) — | (40) LED Backlight Dimming Control 1 | (40) 40 | (40) 0.5 | (40) YE | (40) 6817 | (40) VI | (40) — |
| (41) 41 | (41) 0.75 | (41) BK | (41) 10117 | (41) II | (41) — | (41) AC Outlet Phase A Control | (41) 41 | (41) 0.75 | (41) BK | (41) 10117 | (41) VI | (41) — |
| (42) 42 | (42) 0.75 | (42) RD | (42) 10118 | (42) II | (42) — | (42) AC Outlet Phase B Control | (42) 42 | (42) 0.75 | (42) RD | (42) 10118 | (42) VI | (42) — |
| 43 | — | — | — | — | — | Not Occupied | 43 | — | — | — | — | — |
| (44) 44 | (44) 0.75 | (44) GN / VT | (44) 4786 | (44) II | (44) — | (44) Dome/ Reading Lamp Enable Signal | (44) 44 | (44) 0.75 | (44) GN / VT | (44) 4786 | (44) VI | (44) — |
| (45) 45 | (45) 0.5 | (45) GN / VT | (45) 2857 | (45) II | (45) — | (45) Body Control Module LIN Bus 11 | (45) 45 | (45) 0.5 | (45) GN / VT | (45) 2857 | (45) VI | (45) — |
| (46) 46 | (46) 0.5 | (46) WH / YE | (46) 11325 | (46) II | (46) — | (46) Virtual Key Private CAN Bus [-] Serial Data | (46) 46 | (46) 0.5 | (46) WH / YE | (46) 11325 | (46) VI | (46) — |
| (47) 47 | (47) 0.5 | (47) BU / BN | (47) 11326 | (47) II | (47) — | (47) Virtual Key Private CAN Bus [+] Serial Data | (47) 47 | (47) 0.5 | (47) BU / BN | (47) 11326 | (47) VI | (47) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 - 49 | — | — | — | — | — | Not Occupied | 48 - 49 | — | — | — | — | — |
| (50) 50 | (50) 0.5 | (50) BU / YE | (50) 4984 | (50) II | (50) UW9 | (50) AUTOSAR CAN Bus [-] 5 Serial Data | (50) 50 | (50) 0.35 | (50) BU / YE | (50) 4984 | (50) VI | (50) UW9 |
| (51) 51 | (51) 0.5 | (51) BU / WH | (51) 4985 | (51) II | (51) UW9 | (51) AUTOSAR CAN Bus [+] 5 Serial Data | (51) 51 | (51) 0.35 | (51) BU / WH | (51) 4985 | (51) VI | (51) UW9 |
| 52 - 53 | — | — | — | — | — | Not Occupied | 52 - 53 | — | — | — | — | — |
| (54) 54 | (54) 1 | (54) BK / WH | (54) 10116 | (54) II | (54) — | (54) AC Outlet Low Reference | (54) 54 | (54) 1 | (54) BK / WH | (54) 10116 | (54) VII | (54) — |
| (55) 55 | (55) 2 | (55) BK | (55) 1250 | (55) IV | (55) — | (55) Ground | (55) 55 | (55) 2 | (55) BK | (55) 1250 | (55) V | (55) — |

### X225B Instrument Panel Wiring Harness to Front Floor Console Wiring Harness



5020939



1851890

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7289-9153-40
- Service Connector: 13518747
- Description: 10-Way F 1.5, 2.8 Kaizen Series( L-GY)

**Connector Part Information**
- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 7282-6459-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.5, 2.8 Kaizen Series( L-GY)

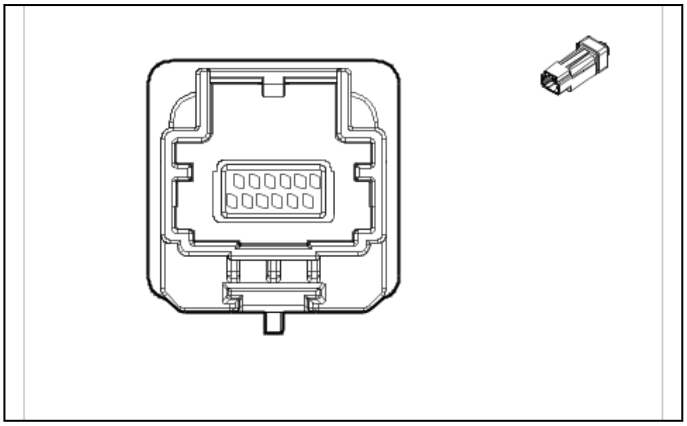
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332534 | J-35616-2A (GY) | J-38125-557 |
| II | 85544080 | J-35616-4A (PU) | J-38125-11A |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X225B Instrument Panel Wiring Harness to Front Floor Console Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 0.5 | (2) RD / YE | (2) 2340 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.5 | (2) RD / YE | (2) 2340 | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) BN / BK | (3) 4996 | (3) I | (3) — | (3) Immobilizer Antenna Signal [+] | (3) 3 | (3) 0.35 | (3) BN / BK | (3) 4996 | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) WH / GY | (4) 4997 | (4) I | (4) — | (4) Immobilizer Antenna Low Signal | (4) 4 | (4) 0.35 | (4) WH / GY | (4) 4997 | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / YE | (5) 7066 | (5) II | (5) — | (5) Entertainment Remote Enable Signal | (5) 5 | (5) 0.5 | (5) GN / YE | (5) 7066 | (5) IV | (5) — |
| 6 - 7 | — | — | — | — | — | Not Occupied | 6 - 7 | — | — | — | — | — |
| (8) 8 | (8) 0.35 | (8) BN / BK | (8) 3552 | (8) I | (8) — | (8) Interior Passive Entry Antenna 1 High Signal | (8) 8 | (8) 0.35 | (8) BN / BK | (8) 3552 | (8) III | (8) — |
| (9) 9 | (9) 0.35 | (9) WH | (9) 3553 | (9) I | (9) — | (9) Interior Passive Entry Antenna 1 Low Signal | (9) 9 | (9) 0.35 | (9) WH | (9) 3553 | (9) III | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |

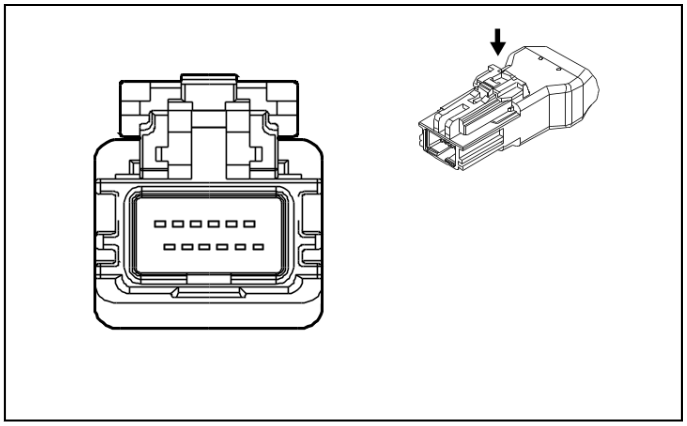
### X225C Front Floor Console Wiring Harness to Instrument Panel Wiring Harness



5906641

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness USB
- OEM Connector: 111146-1018
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way F 2.0 HSAL-2 Series( BK)



4527210

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness USB
- OEM Connector: 111146-7000
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 12-Way M 2.0 HSAL-2 Series( BK)

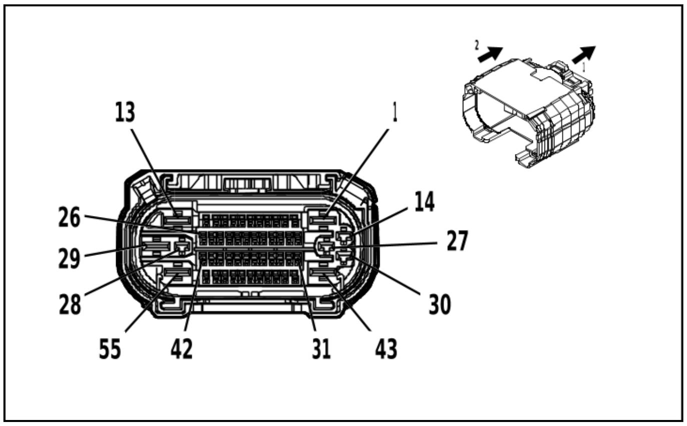
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

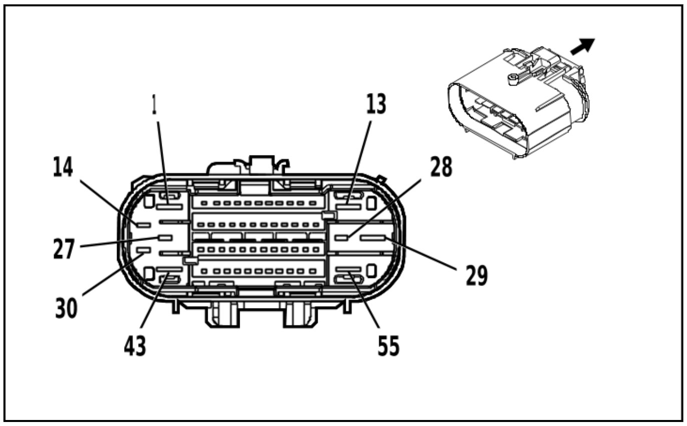
## X225C Front Floor Console Wiring Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | USB | — | I | — | USB Serial Data | — | — | USB | — | I | — |

### X225D Front Seat Wiring Harness - Center to Body Wiring Harness (AZ3)



4992168



4993301

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Center
- OEM Connector: 35016652
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way M ( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Not required | No Tool Required | No Tool Required |

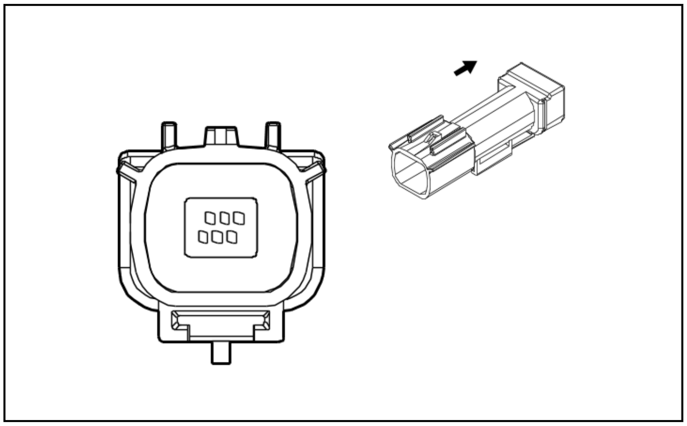
## X225D Front Seat Wiring Harness - Center to Body Wiring Harness (AZ3)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK / WH | (1) 1351 | (1) III | (1) — | (1) Signal Ground | (1) 1 | (1) 0.5 | (1) BK / WH | (1) 1351 | (1) IV | (1) — |
| (2) 2 | (2) 0.5 | (2) BK / WH | (2) 1451 | (2) I | (2) — | (2) Signal Ground | (2) 2 | (2) 0.5 | (2) BK / WH | (2) 1451 | (2) IV | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) I | (3) — | (3) AC Power Outlet Sensor High Reference | (3) 3 | (3) 0.5 | (3) VT / RD | (3) 4049 | (3) IV | (3) — |
| (4) 4 | (4) 0.5 | (4) RD / VT | (4) 6340 | (4) I | (4) — | (4) Battery Positive Voltage | (4) 4 | (4) 0.5 | (4) RD / VT | (4) 6340 | (4) IV | (4) — |
| 5 - 13 | — | — | — | — | — | Not Occupied | 5 - 13 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (14) 14 | (14) 0.5 | (14) V T | (14) 47 01 | (14) II | (14) — | (14) Retained Accessory Power Control | (14) 14 | (14) 0.5 | (14) V T | (14) 47 01 | (14) IV | (14) — |
| (15) 15 | (15) 0.5 | (15) G N / BK | (15) 22 11 | (15) I | (15) — | (15) Rear Blower Motor Speed Control | (15) 15 | (15) 0.5 | (15) G N / BK | (15) 22 11 | (15) IV | (15) — |
| 16 - 19 | — | — | — | — | — | Not Occupied | 16 - 19 | — | — | — | — | — |
| (20) 20 | (20) 0.35 | (20) G N / BK | (20) 27 38 | (20) I | (20) — | (20) Near Field Communicati on Module LIN Bus 1 | (20) 20 | (20) 0.35 | (20) G N / BK | (20) 27 38 | (20) IV | (20) — |
| (21) 21 | (21) 0.5 | (21) WH / YE | (21) 11 325 | (21) I | (21) — | (21) Virtual Key Private CAN Bus [-] Serial Data | (21) 21 | (21) 0.5 | (21) WH / YE | (21) 11 325 | (21) IV | (21) — |
| (22) 22 | (22) 0.5 | (22) B U / BN | (22) 11 326 | (22) I | (22) — | (22) Virtual Key Private CAN Bus [+] Serial Data | (22) 22 | (22) 0.5 | (22) B U / BN | (22) 11 326 | (22) IV | (22) — |
| 23 - 26 | — | — | — | — | — | Not Occupied | 23 - 26 | — | — | — | — | — |
| (27) 27 | (27) 0.5 | (27) R D / BN | (27) 75 40 | (27) II | (27) — | (27) Battery Positive Voltage | (27) 27 | (27) 0.5 | (27) R D / BN | (27) 75 40 | (27) IV | (27) — |
| 28 - 32 | — | — | — | — | — | Not Occupied | 28 - 32 | — | — | — | — | — |
| (33) 33 | (33) 0.5 | (33) B N / BK | (33) 49 96 | (33) I | (33) — | (33) Immobili zer Antenna Signal [+] | (33) 33 | (33) 0.5 | (33) B N / BK | (33) 49 96 | (33) IV | (33) — |
| (34) 34 | (34) 0.5 | (34) WH / GY | (34) 49 97 | (34) I | (34) — | (34) Immobili zer Antenna Low Signal | (34) 34 | (34) 0.5 | (34) WH / GY | (34) 49 97 | (34) IV | (34) — |
| (35) 35 | (35) 0.75 | (35) B U / BN | (35) 68 07 | (35) I | (35) — | (35) DC/AC Inverter Control | (35) 35 | (35) 0.75 | (35) B U / BN | (35) 68 07 | (35) IV | (35) — |
| 36 - 39 | — | — | — | — | — | Not Occupied | 36 - 39 | — | — | — | — | — |
| (40) 40 | (40) 0.5 | (40) Y E | (40) 68 17 | (40) I | (40) — | (40) LED Backlight Dimming Control 1 | (40) 40 | (40) 0.5 | (40) Y E | (40) 68 17 | (40) IV | (40) — |
| (41) 41 | (41) 0.75 | (41) B K | (41) 10 117 | (41) I | (41) — | (41) AC Outlet Phase A Control | (41) 41 | (41) 0.75 | (41) B K | (41) 10 117 | (41) IV | (41) — |
| (42) 42 | (42) 0.75 | (42) R D | (42) 10 118 | (42) I | (42) — | (42) AC Outlet Phase B Control | (42) 42 | (42) 0.75 | (42) R D | (42) 10 118 | (42) IV | (42) — |
| 43 - 45 | — | — | — | — | — | Not Occupied | 43 - 45 | — | — | — | — | — |
| (46) 46 | (46) 0.5 | (46) WH / YE | (46) 11 325 | (46) I | (46) — | (46) Virtual Key Private CAN Bus [-] Serial Data | (46) 46 | (46) 0.5 | (46) WH / YE | (46) 11 325 | (46) IV | (46) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (47) 47 | (47) 0.5 | (47) BU / BN | (47) 11326 | (47) I | (47) — | (47) Virtual Key Private CAN Bus [+] Serial Data | (47) 47 | (47) 0.5 | (47) BU / BN | (47) 11326 | (47) IV | (47) — |
| 48 - 49 | — | — | — | — | — | Not Occupied | 48 - 49 | — | — | — | — | — |
| (50) 50 | (50) 0.5 | (50) BU / YE | (50) 4984 | (50) I | (50) — | (50) AUTOSAR CAN Bus [-] 5 Serial Data | (50) 50 | (50) 0.5 | (50) BU / YE | (50) 4984 | (50) IV | (50) — |
| (51) 51 | (51) 0.5 | (51) BU / WH | (51) 4985 | (51) I | (51) — | (51) AUTOSAR CAN Bus [+] 5 Serial Data | (51) 51 | (51) 0.5 | (51) BU / WH | (51) 4985 | (51) IV | (51) — |
| 52 - 53 | — | — | — | — | — | Not Occupied | 52 - 53 | — | — | — | — | — |
| (54) 54 | (54) 1 | (54) BK / WH | (54) 10116 | (54) I | (54) — | (54) AC Outlet Low Reference | (54) 54 | (54) 1 | (54) BK / WH | (54) 10116 | (54) IV | (54) — |
| (55) 55 | (55) 0.75 | (55) BK | (55) 1250 | (55) III | (55) — | (55) Ground | (55) 55 | (55) 0.75 | (55) BK | (55) 1250 | (55) IV | (55) — |

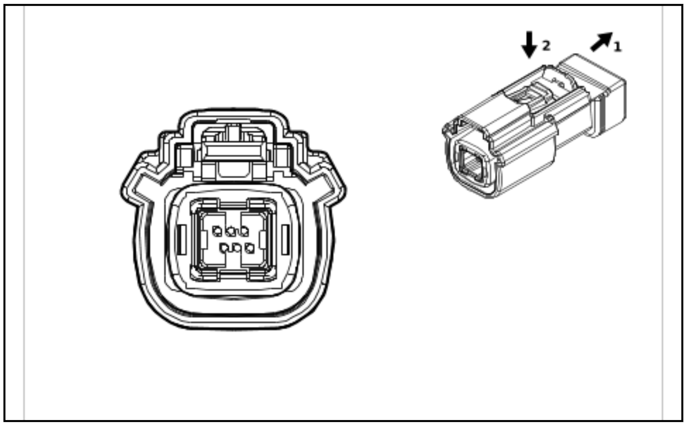
### X226 Front Floor Console Wiring Harness to Body Wiring Harness



4477041

**Connector Part Information**

- Harness Type: Front Floor Console Wiring Harness
- OEM Connector: 111194-1018
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way F HSAL-2 Series, Sealed( BK)



4477145

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 100048-1018
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series, Sealed( BK)

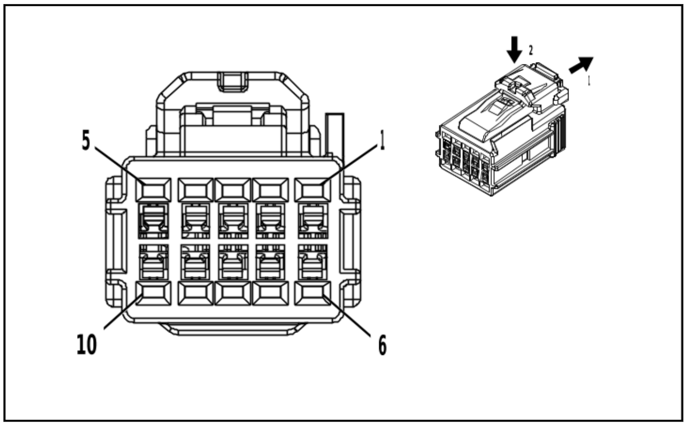
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X226 Front Floor Console Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | LVDS | — | I | — | Rear Seat Infotainment Auxiliary Audio/Video Jack LVDS (Low Voltage Differential Signaling) Low Reference | — | — | LVDS | — | I | — |

### X250 Instrument Panel Wiring Harness to Heater Wiring Harness



4254030

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**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 6098-9004
- Service Connector: 13532428
- Description: 10-Way F 1.2 Series( BK)

**Connector Part Information**
- Harness Type: Heater Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M ( BK)

## Terminal Part Information

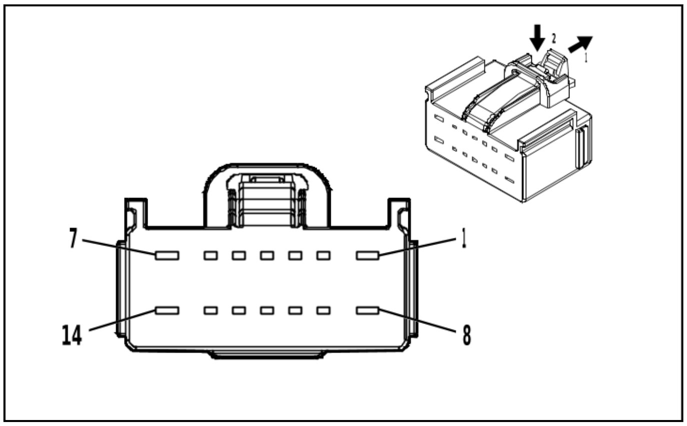
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 84962854 | J-35616-12 (BU) | J-38125-215A |
| II | Not required | No Tool Required | No Tool Required |

## X250 Instrument Panel Wiring Harness to Heater Wiring Harness

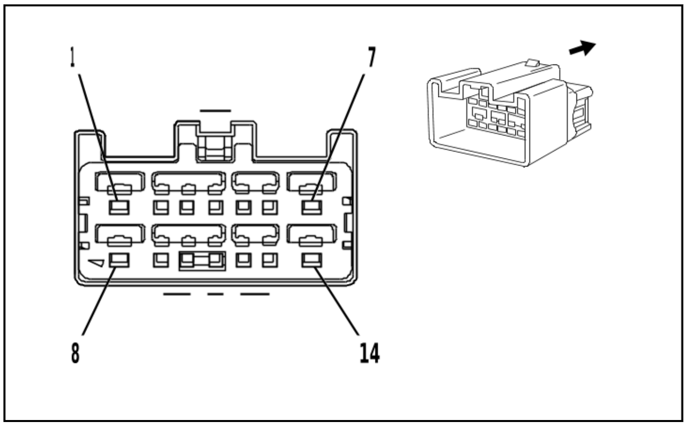
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 0.5 | (2) BK | (2) 1050 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0.5 | (2) BK | (2) 1050 | (2) II | (2) — |
| 3 - 4 | — | — | — | — | — | Not Occupied | 3 - 4 | — | — | — | — | — |
| (5) 5 | (5) 0.35 | (5) GY | (5) 6137 | (5) I | (5) — | (5) Air Conditioning Evaporator Temperature Sensor Signal | (5) 5 | (5) 0.35 | (5) BN | (5) 6137 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.35 | (6) GN / VT | (6) 2852 | (6) I | (6) — | (6) Body Control Module LIN Bus 6 | (6) 6 | (6) 0.35 | (6) BU | (6) 2852 | (6) II | (6) — |
| (7) 7 | (7) 0.35 | (7) BK / YE | (7) 407 | (7) I | (7) — | (7) Sensor Low Reference | (7) 7 | (7) 0.35 | (7) BK / YE | (7) 407 | (7) II | (7) — |
| (8) 8 | (8) 0.35 | (8) VT / WH | (8) 239 | (8) I | (8) — | (8) Run/ Crank Ignition 1 Voltage | (8) 8 | (8) 0.35 | (8) BN / VT | (8) 239 | (8) II | (8) — |
| (9) 9 | (9) 0.35 | (9) WH / YE | (9) 4634 | (9) I | (9) — | (9) HVAC Remote Enable Signal | (9) 9 | (9) 0.35 | (9) RD | (9) 4634 | (9) II | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |

### X251 Body Wiring Harness to Auxiliary Heater and Air Conditioning Wiring Harness



4934172



1283905

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7630-40
- Service Connector: 13513605
- Description: 14-Way F 1.5, 2.8 YESC Series( GY)

**Connector Part Information**
- Harness Type: Auxiliary Heater and Air Conditioning Wiring Harness
- OEM Connector: 7282-6447-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way M 1.5, 2.8 YESC Series( L-GY)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332534 | J-35616-2A (GY) | J-38125-557 |
| II | 85544080 | J-35616-4A (PU) | J-38125-11A |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X251 Body Wiring Harness to Auxiliary Heater and Air Conditioning Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) RD / GY | (1) 1740 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 3 | (1) RD / YE | (1) 1740 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.35 | (3) WH / YE | (3) 4634 | (3) I | (3) — | (3) HVAC Remote Enable Signal | (3) 3 | (3) 0.75 | (3) RD / WH | (3) 4634 | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) BK | (4) 1450 | (4) I | (4) — | (4) Ground | (4) 4 | (4) 0.35 | (4) BK / WH | (4) 1450 | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) GN / BN | (5) 2853 | (5) I | (5) — | (5) Body Control Module LIN Bus 7 | (5) 5 | (5) 0.75 | (5) GN / WH | (5) 2853 | (5) III | (5) — |
| 6 - 8 | — | — | — | — | — | Not Occupied | 6 - 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) GN / BK | (9) 2211 | (9) I | (9) — | (9) Rear Blower Motor Speed Control | (9) 9 | (9) 0.35 | (9) BN | (9) 2211 | (9) III | (9) — |
| 10 - 13 | — | — | — | — | — | Not Occupied | 10 - 13 | — | — | — | — | — |
| (14) 14 | (14) 3 | (14) BK | (14) 1450 | (14) II | (14) — | (14) Ground | (14) 14 | (14) 3 | (14) BK | (14) 1450 | (14) IV | (14) — |

### X251L Heater Wiring Harness to Body Wiring Harness (C3A)

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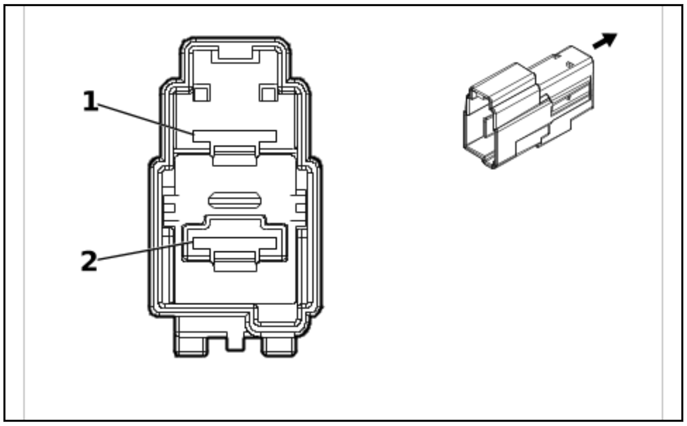


5375411

**Connector Part Information**
- Harness Type: Heater Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 7288-8751-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 9.5 Y-Type Series( BK)

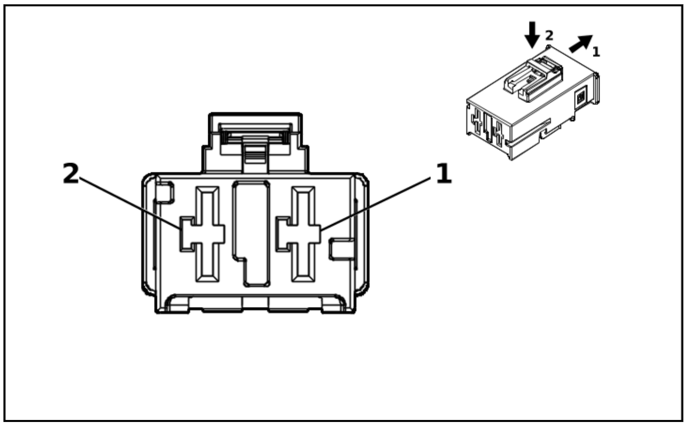
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-21 (RD) | No Tool Required |

## X251L Heater Wiring Harness to Body Wiring Harness (C3A)

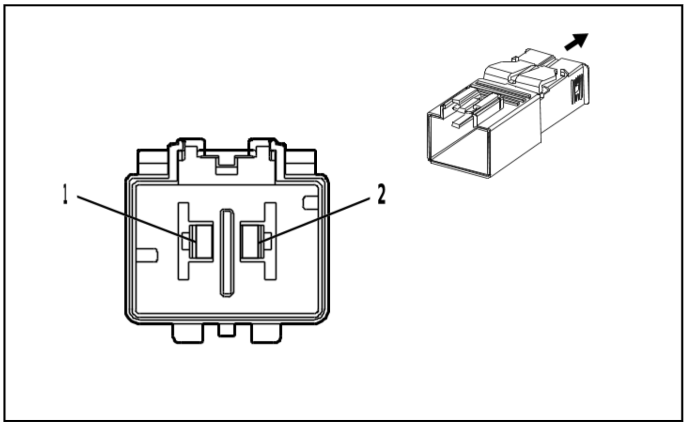
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (2) 2 | (2) 16 | (2) RD / GY | (2) 642 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 16 | (2) RD / GY | (2) 642 | (2) II | (2) — |

## X251P Instrument Panel Wiring Harness to Body Wiring Harness (5W4 / 9C1)



5187955

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 2317368-1
- Service Connector: 86308595
- Description: 2-Way F 9.5 MCON-LL Series( BK)



4891120

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 2317373-1
- Service Connector: 85675535
- Description: 2-Way M 9.5 MCON-LL Series( BK)

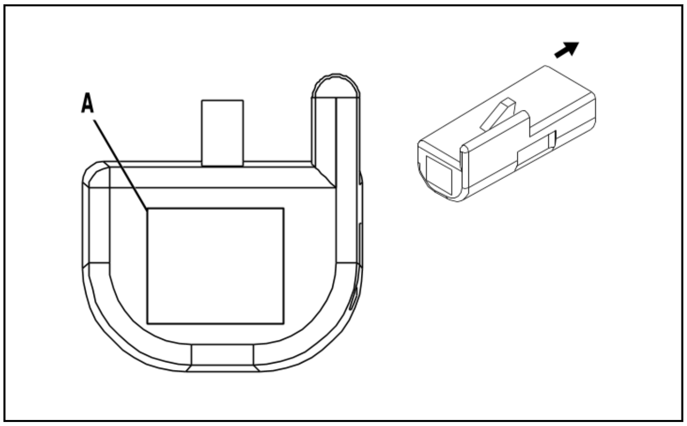
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-22 (RD) | No Tool Required |
| II | Not required | J-35616-21 (RD) | No Tool Required |

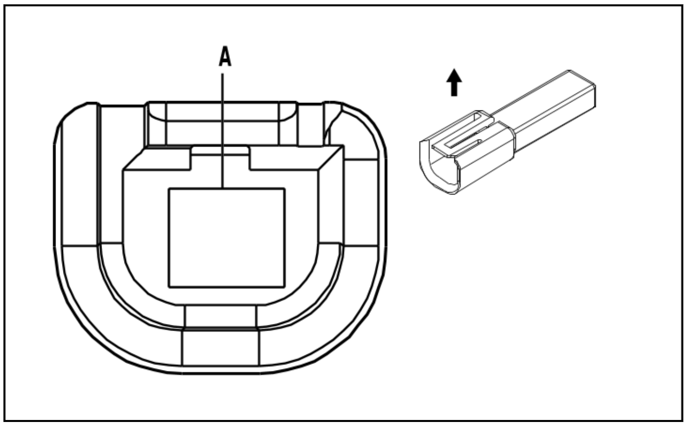
## X251P Instrument Panel Wiring Harness to Body Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 5 | (1) RD / GY | (1) 2742 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 6 | (1) RD / GY | (1) 2742 | (1) II | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |

### X252 Body Wiring Harness to Body Wiring Harness (5W4 / 9C1)



439818



611495

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12047682
- Service Connector: 12101850
- Description: 1-Way F 150 Metri-Pack Series( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 12047683
- Service Connector: 12101828
- Description: 1-Way M 150 Metri-Pack Series( BK)

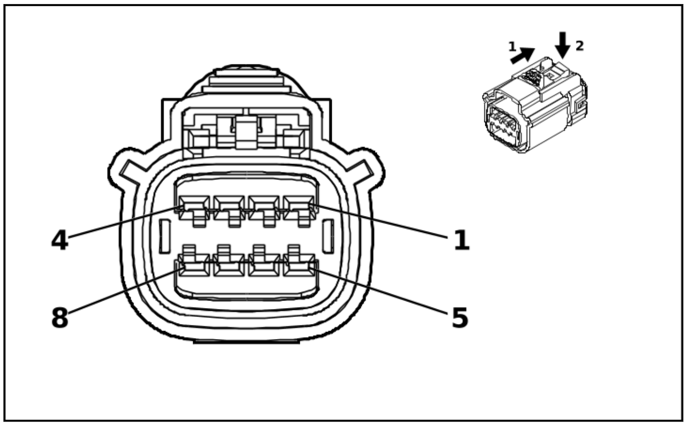
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X252 Body Wiring Harness to Body Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0.5 | BN / WH | 28 | I | — | Horn Relay Control | A | 0.35 | BN / WH | 28 | II | — |

### X300G Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)



5253496

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**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15514667
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Police Accessories Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M ( BK)

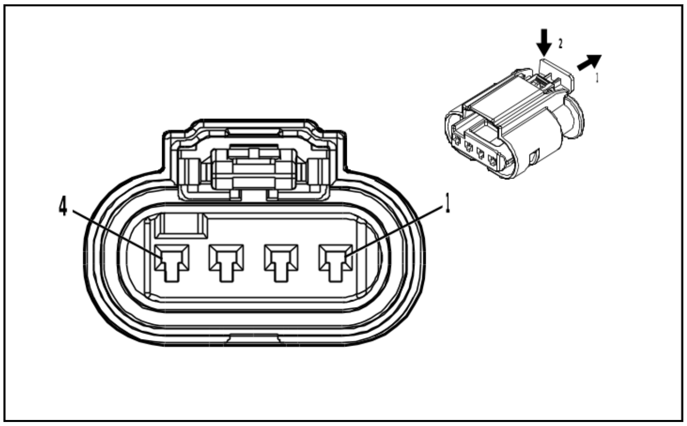
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-2A (GY) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |

## X300G Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BN | (1) 8855 | (1) II | (1) — | (1) Police Front Grille Light 1 Control | (1) 1 | (1) 0.75 | (1) BN | (1) 8855 | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) BN / BU | (2) 8856 | (2) II | (2) — | (2) Police Front Grille Light 2 Control | (2) 2 | (2) 0.75 | (2) BN / BU | (2) 8856 | (2) III | (2) — |
| (3) 3 | (3) 0.75 | (3) BK / BN | (3) 8857 | (3) II | (3) — | (3) Police Front Grille Light Low Reference | (3) 3 | (3) 0.75 | (3) BK / BN | (3) 8857 | (3) III | (3) — |
| (4) 4 | (4) 0.75 | (4) WH | (4) 8858 | (4) II | (4) — | (4) Police Front Grille Light Synchronization Signal | (4) 4 | (4) 0.75 | (4) WH | (4) 8858 | (4) III | (4) — |
| (5) 5 | (5) 0.75 | (5) BN / YE | (5) 8859 | (5) II | (5) — | (5) Police Front Grille Light Steady Burn Control | (5) 5 | (5) 0.75 | (5) BN / YE | (5) 8859 | (5) III | (5) — |
| (6) 6 | (6) 0.75 | (6) WH / BK | (6) 8860 | (6) II | (6) — | (6) Police Front Grille Spare 1 Signal | (6) 6 | (6) 0.75 | (6) WH / BK | (6) 8860 | (6) III | (6) — |
| (7) 7 | (7) 1.5 | (7) GN / WH | (7) 8861 | (7) I | (7) — | (7) Police Front Grille Speaker [+] Control | (7) 7 | (7) 1.5 | (7) GN / WH | (7) 8861 | (7) III | (7) — |
| (8) 8 | (8) 1.5 | (8) BU / WH | (8) 8862 | (8) I | (8) — | (8) Police Front Grille Speaker [-] Control | (8) 8 | (8) 1.5 | (8) BU / WH | (8) 8862 | (8) III | (8) — |

## X300L Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)



4994577

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**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 34900-4120
- Service Connector: 19371202
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Police Accessories Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M ( BK)

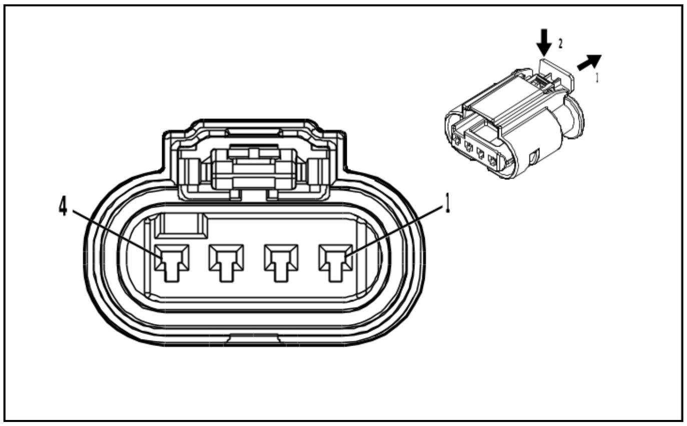
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

### X300L Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 8890 | (1) I | (1) — | (1) Police Front Corner Light Control | (1) 1 | (1) 0.75 | (1) BU | (1) 8890 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 150 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0.75 | (2) BK | (2) 150 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / WH | (3) 8891 | (3) I | (3) — | (3) Police Corner Strobe Synchronization Signal | (3) 3 | (3) 0.75 | (3) BU / WH | (3) 8891 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) VT | (4) 8893 | (4) I | (4) — | (4) Police Front Corner Strobe Control | (4) 4 | (4) 0.75 | (4) VT | (4) 8893 | (4) II | (4) — |

### X300R Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)



4994577

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**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 34900-4120
- Service Connector: 19371202
- Description: 4-Way F 1.2 MCON-CB Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Police Accessories Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M ( BK)

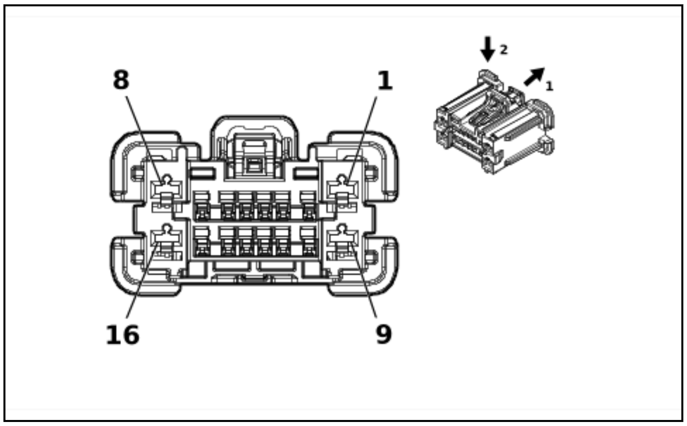
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X300R Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)

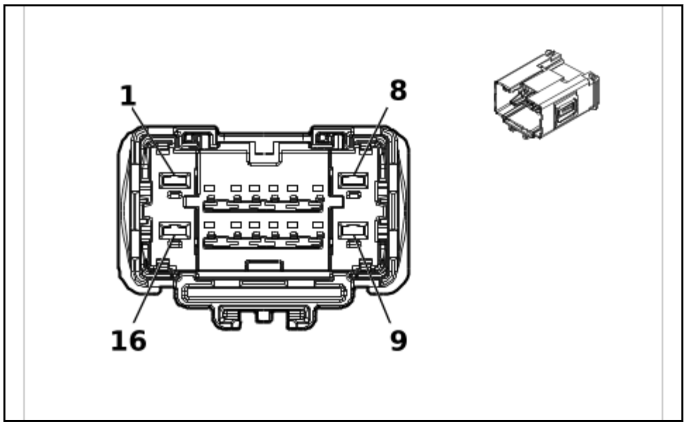
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU | (1) 8890 | (1) I | (1) — | (1) Police Front Corner Light Control | (1) 1 | (1) 0.75 | (1) BU | (1) 8890 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 250 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0.75 | (2) BK | (2) 250 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / WH | (3) 8891 | (3) I | (3) — | (3) Police Corner Strobe Synchronization Signal | (3) 3 | (3) 0.75 | (3) BU / WH | (3) 8891 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) VT | (4) 8893 | (4) I | (4) — | (4) Police Front Corner Strobe Control | (4) 4 | (4) 0.75 | (4) VT | (4) 8893 | (4) II | (4) — |

## X309 Body Wiring Harness to Body Wiring Harness



6049199

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35465015
- Service Connector: 13543061
- Description: 16-Way F 1.2, 2.8 OCS Series( BK)



6049238

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 35465017
- Service Connector: 13543064
- Description: 16-Way M 1.2, 2.8 OCS Series( BK)

### Terminal Part Information

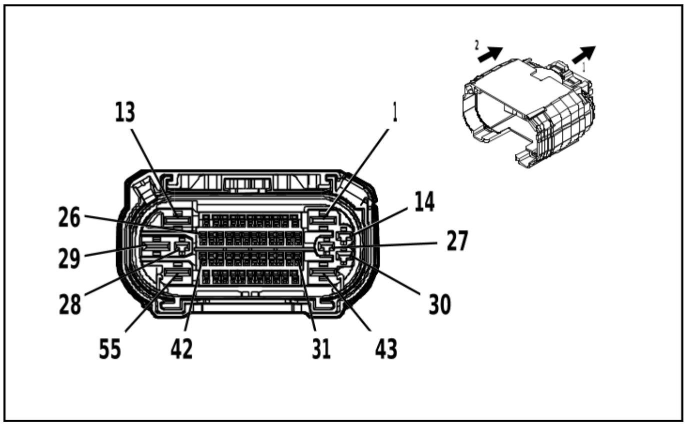
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19370818 | J-35616-12 (BU) | J-38125-553 |
| II | 85524896 | J-35616-4A (PU) | J-38125-215A |
| III | 19355732 | J-35616-5 (PU) | J-38125-221 |
| IV | 84867140 | J-35616-13 (BU) | J-38125-553 |

### X309 Body Wiring Harness to Body Wiring Harness

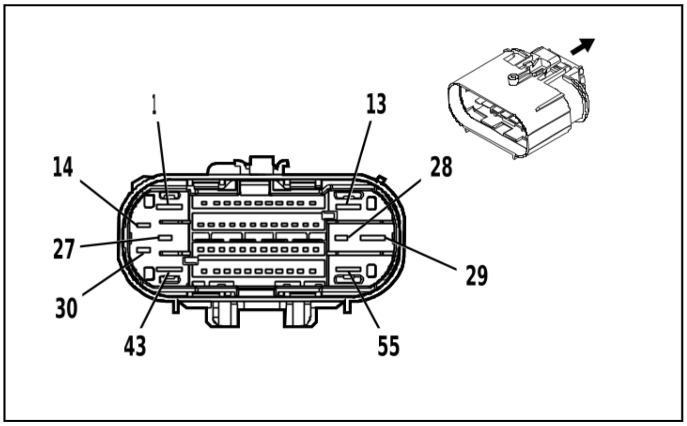
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) RD / BN | (1) 4940 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 1 | (1) RD / BN | (1) 4940 | (1) III | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / WH | (2) 4740 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.5 | (2) RD / WH | (2) 4740 | (2) IV | (2) — |
| 3 - 5 | — | — | — | — | — | Not Occupied | 3 - 5 | — | — | — | — | — |
| (6) 6 | (6) 0.75 | (6) GY / WH | (6) 8577 | (6) II | (6) — | (6) Right Rear D-Pillar Speaker [-] Control | (6) 6 | (6) 0.75 | (6) GY / WH | (6) 8577 | (6) IV | (6) — |
| 7 - 8 | — | — | — | — | — | Not Occupied | 7 - 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) RD / GY | (9) 4840 | (9) II | (9) — | (9) Battery Positive Voltage | (9) 9 | (9) 0.5 | (9) RD / GY | (9) 4840 | (9) III | (9) — |
| 10 - 13 | — | — | — | — | — | Not Occupied | 10 - 13 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (14) 14 | (14) 0.75 | (14) VT | (14) 8578 | (14) II | (14) — | (14) Right Rear D-Pillar Speaker [+] Control | (14) 14 | (14) 0.75 | (14) VT | (14) 8578 | (14) IV | (14) — |
| 15 - 16 | — | — | — | — | — | Not Occupied | 15 - 16 | — | — | — | — | — |

### X328 Front Seat Wiring Harness - Driver to Body Wiring Harness



4992168



4993301

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 35327294
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13530982
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-42 (RD) | No Tool Required |
| III | Not required | No Tool Required | No Tool Required |
| IV | 84847992 | J-35616-32 (OG) | J-38125-36 |
| V | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VI | 87838750 | J-35616-13 (BU) | J-38125-553 |

## X328 Front Seat Wiring Harness - Driver to Body Wiring Harness

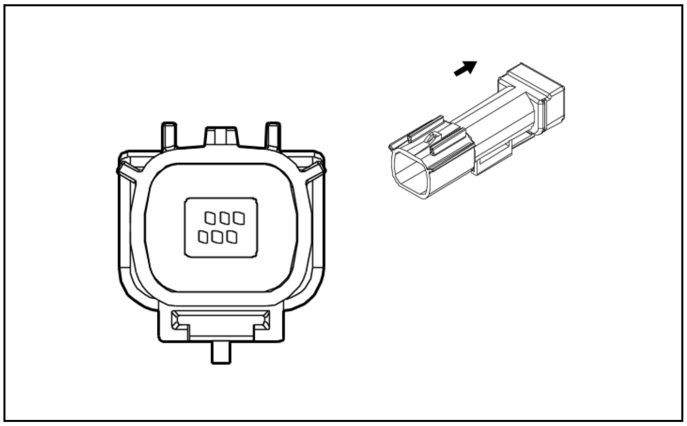
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1150 | (1) II | (1) — | (1) Ground | (1) 1 | (1) 2.5 | (1) BK | (1) 1150 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.35 | (3) GN / WH | (3) 7530 | (3) I | (3) — | (3) Driver Seat Adjuster Memory Module LIN Bus 1 | (3) 3 | (3) 0.5 | (3) GN / WH | (3) 7530 | (3) V | (3) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.75 | (4) RD / BN | (4) 2240 | (4) I | (4) — | (4) Battery Positive Voltage | (4) 4 | (4) 0.75 | (4) RD / BN | (4) 2240 | (4) V | (4) — |
| (5) 5 | (5) 0.35 | (5) WH | (5) 615 | (5) I | (5) — | (5) Seat Memory Switch Signal 1 | (5) 5 | (5) 0.5 | (5) WH | (5) 615 | (5) V | (5) — |
| (6) 6 | (6) 0.35 | (6) BU / GN | (6) 614 | (6) I | (6) — | (6) Seat Memory Switch Set Signal | (6) 6 | (6) 0.5 | (6) BU / GN | (6) 614 | (6) V | (6) — |
| 7 - 9 | — | — | — | — | — | Not Occupied | 7 - 9 | — | — | — | — | — |
| (10) 10 | (10) 0.5 | (10) BK / YE | (10) 2080 | (10) I | (10) — | (10) Driver Heated Seat Thermistor Low Reference | (10) 10 | (10) 0.5 | (10) BK / YE | (10) 2080 | (10) V | (10) — |
| (11) 11 | (11) 0.5 | (11) YE / GY | (11) 2079 | (11) I | (11) — | (11) Driver Seat Heating Temperature Sensor Signal | (11) 11 | (11) 0.5 | (11) YE / GY | (11) 2079 | (11) V | (11) — |
| (12) 12 | (12) 0.75 | (12) RD / BN | (12) 3640 | (12) I | (12) — | (12) Battery Positive Voltage | (12) 12 | (12) 0.75 | (12) RD / BN | (12) 3640 | (12) V | (12) — |
| 13 - 14 | — | — | — | — | — | Not Occupied | 13 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) I | (15) — | (15) Driver Seat Heating Element Control | (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) V | (15) — |
| (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) I | (16) — | (16) Driver Seat Heating Element Low Reference | (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) V | (16) — |
| 17 | — | — | — | — | — | Not Occupied | 17 | — | — | — | — | — |
| (18) 18 | (18) 0.5 | (18) BU | (18) 2425 | (18) I | (18) — | (18) Driver Seat Back Heating Temperature Sensor Signal | (18) 18 | (18) 0.5 | (18) BU | (18) 2425 | (18) V | (18) — |
| (19) 19 | (19) 0.75 | (19) BN | (19) 2432 | (19) I | (19) — | (19) Driver Seat Back Heating Element Control | (19) 19 | (19) 0.75 | (19) BN | (19) 2432 | (19) V | (19) — |
| (20) 20 | (20) 0.5 | (20) GN / VT | (20) 5906 | (20) I | (20) — | (20) Driver Seat Blower Motor Control 1 | (20) 20 | (20) 0.5 | (20) GN / VT | (20) 5906 | (20) V | (20) — |
| (21) 21 | (21) 0.5 | (21) VT / WH | (21) 1139 | (21) I | (21) — | (21) Run/Crank Ignition 1 Voltage | (21) 21 | (21) 0.5 | (21) VT / WH | (21) 1139 | (21) V | (21) — |
| (22) 22 | (22) 0.5 | (22) BK / WH | (22) 1451 | (22) I | (22) — | (22) Signal Ground | (22) 22 | (22) 0.75 | (22) BK / WH | (22) 1451 | (22) V | (22) — |
| 23 - 24 | — | — | — | — | — | Not Occupied | 23 - 24 | — | — | — | — | — |

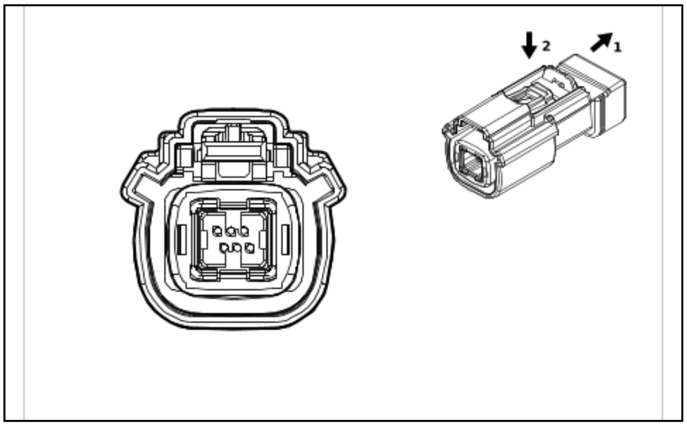
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (25) 25 | (25) 0.35 | (25) BU / VT | (25) 4101 | (25) I | (25) — | (25) AUTOSAR CAN Bus [+] 4 Serial Data | (25) 25 | (25) 0.35 | (25) BU / VT | (25) 4101 | (25) V | (25) — |
| (26) 26 | (26) 0.35 | (26) WH | (26) 4100 | (26) I | (26) — | (26) AUTOSAR CAN Bus [-] 4 Serial Data | (26) 26 | (26) 0.35 | (26) WH | (26) 4100 | (26) V | (26) — |
| 27 - 28 | — | — | — | — | — | Not Occupied | 27 - 28 | — | — | — | — | — |
| (29) 29 | (29) 2.5 | (29) RD / YE | (29) 5040 | (29) II | (29) — | (29) Battery Positive Voltage | (29) 29 | (29) 2.5 | (29) RD / YE | (29) 5040 | (29) IV | (29) — |
| 30 | — | — | — | — | — | Not Occupied | 30 | — | — | — | — | — |
| (31) 31 | (31) 0.5 | (31) GY | (31) 157 | (31) I | (31) — | (31) Interior Lamp Control | (31) 31 | (31) 0.5 | (31) GY | (31) 157 | (31) V | (31) — |
| (32) 32 | (32) 0.5 | (32) OG / GY | (32) 2652 | (32) I | (32) — | (32) Driver Seat Belt Sensor Signal | (32) 32 | (32) 0.5 | (32) OG / GY | (32) 2652 | (32) V | (32) — |
| (33) 33 | (33) 0.5 | (33) BK / OG | (33) 1363 | (33) I | (33) — | (33) Driver Seat Belt Switch Low Reference | (33) 33 | (33) 0.5 | (33) BK / OG | (33) 1363 | (33) V | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.5 | (35) OG / BU | (35) 4962 | (35) III | (35) — | (35) Driver Seat Back Air Bag High Control | (35) 35 | (35) 0.5 | (35) OG / BU | (35) 4962 | (35) V | (35) — |
| (36) 36 | (36) 0.5 | (36) BK / OG | (36) 4963 | (36) III | (36) — | (36) Driver Seat Back Air Bag Low Control | (36) 36 | (36) 0.5 | (36) BK / OG | (36) 4963 | (36) V | (36) — |
| 37 - 47 | — | — | — | — | — | Not Occupied | 37 - 47 | — | — | — | — | — |
| (48) 48 | (48) 0.35 | (48) YE / BN | (48) 3037 | (48) I | (48) — | (48) Driver Seat Left Rear Haptic Movement Motor Control | (48) 48 | (48) 0.35 | (48) YE / BN | (48) 3037 | (48) V | (48) — |
| (49) 49 | (49) 0.35 | (49) BN | (49) 3038 | (49) I | (49) — | (49) Driver Seat Right Rear Haptic Movement Motor Control | (49) 49 | (49) 0.35 | (49) BN | (49) 3038 | (49) V | (49) — |
| (50) 50 | (50) 0.35 | (50) BU / VT | (50) 4101 | (50) I | (50) — | (50) AUTOSAR CAN Bus [+] 4 Serial Data | (50) 50 | (50) 0.35 | (50) BU / VT | (50) 4101 | (50) V | (50) — |
| (51) 51 | (51) 0.35 | (51) WH | (51) 4100 | (51) I | (51) — | (51) AUTOSAR CAN Bus [-] 4 Serial Data | (51) 51 | (51) 0.35 | (51) WH | (51) 4100 | (51) V | (51) — |
| (52) 52 | (52) 0.5 | (52) OG / BN | (52) 4207 | (52) III | (52) — | (52) Driver Inboard Seat Side Air Bag High Control | (52) 52 | (52) 0.5 | (52) OG / BN | (52) 4207 | (52) VI | (52) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (53) 53 | (53) 0.5 | (53) G Y / OG | (53) 42 08 | (53) III | (53) — | (53) Driver Inboard Seat Side Air Bag Low Control | (53) 53 | (53) 0.5 | (53) G Y / OG | (53) 42 08 | (53) VI | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

## X329 Body Wiring Harness to Front Seat Wiring Harness - Driver



4477041



4477145

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 111194-1018
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way F HSAL-2 Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Driver
- OEM Connector: 13551209
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series, Sealed( BK)

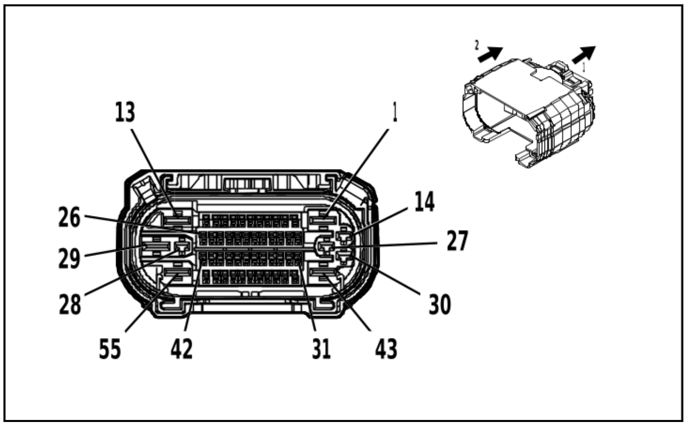
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

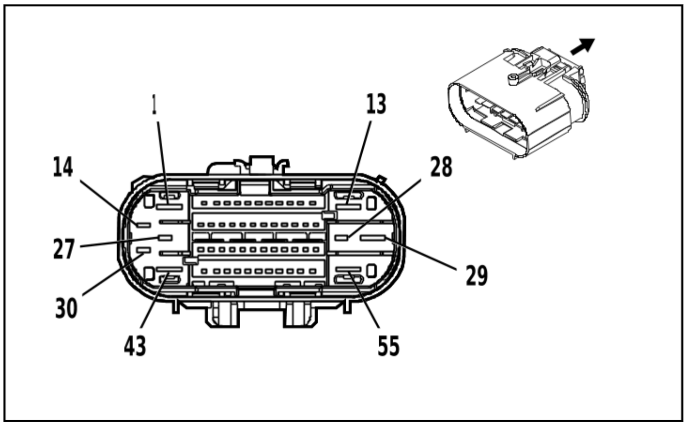
## X329 Body Wiring Harness to Front Seat Wiring Harness - Driver

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | LVDS | — | I | — | Rear Seat Infotainment Display LVDS (Low Voltage Differential Signaling) Low Reference | — | — | LVDS | — | I | — |

### X333 Front Seat Wiring Harness - Passenger to Body Wiring Harness (- (5W4 / 9C1))



4992168



4993301

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35327297
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 13530982
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Not required | No Tool Required | No Tool Required |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84992391 | J-35616-5 (PU) | J-38125-36 |

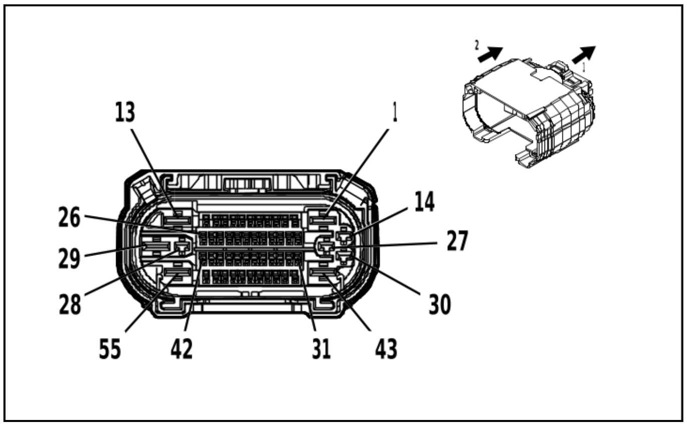
## X333 Front Seat Wiring Harness - Passenger to Body Wiring Harness (- (5W4 / 9C1))

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1250 | (1) III | (1) — | (1) Ground | (1) 1 | (1) 2.5 | (1) BK | (1) 1250 | (1) V | (1) — |
| 2 - 3 | — | — | — | — | — | Not Occupied | 2 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0.75 | (4) RD / BU | (4) 3940 | (4) I | (4) — | (4) Battery Positive Voltage | (4) 4 | (4) 0.75 | (4) RD / BU | (4) 3940 | (4) VI | (4) — |
| 5 - 6 | — | — | — | — | — | Not Occupied | 5 - 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) I | (7) — | (7) AUTOSAR CAN Bus [+] 1 Serial Data | (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) VI | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) I | (8) — | (8) AUTOSAR CAN Bus [-] 1 Serial Data | (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) VI | (8) — |

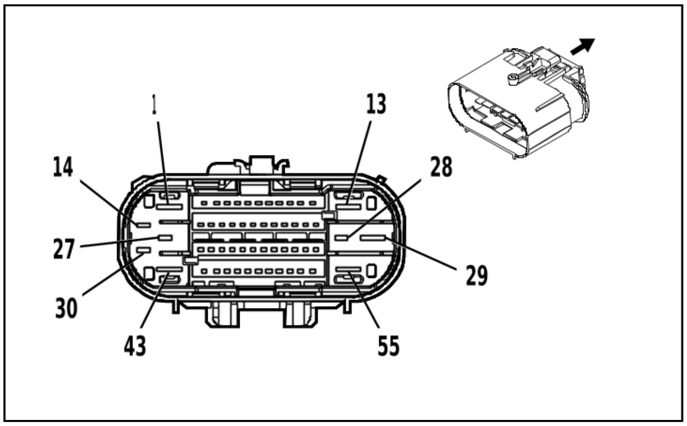
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (9) 9 | (9) 0.5 | (9) GN / VT | (9) 2857 | (9) I | (9) — | (9) Body Control Module LIN Bus 11 | (9) 9 | (9) 0.5 | (9) GN / VT | (9) 2857 | (9) VI | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1451 | (11) I | (11) — | (11) Signal Ground | (11) 11 | (11) 0.75 | (11) BK / WH | (11) 1451 | (11) VI | (11) — |
| (12) 12 | (12) 0.75 | (12) RD / BN | (12) 3640 | (12) I | (12) — | (12) Battery Positive Voltage | (12) 12 | (12) 0.75 | (12) RD / BN | (12) 3640 | (12) VI | (12) — |
| (13) 13 | (13) 0.75 | (13) RD / GN | (13) 6140 | (13) III | (13) — | (13) Battery Positive Voltage | (13) 13 | (13) 0.75 | (13) RD / GN | (13) 6140 | (13) V | (13) — |
| (14) 14 | (14) 0.5 | (14) YE / GY | (14) 2079 | (14) II | (14) — | (14) Driver Seat Heating Temperature Sensor Signal | (14) 14 | (14) 0.5 | (14) YE / GY | (14) 2079 | (14) VII | (14) — |
| (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) I | (15) — | (15) Driver Seat Heating Element Control | (15) 15 | (15) 0.75 | (15) BN / VT | (15) 2077 | (15) VI | (15) — |
| (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) I | (16) — | (16) Driver Seat Heating Element Low Reference | (16) 16 | (16) 0.75 | (16) BN / BK | (16) 2078 | (16) VI | (16) — |
| (17) 17 | (17) 0.5 | (17) BK / YE | (17) 2080 | (17) I | (17) — | (17) Driver Heated Seat Thermistor Low Reference | (17) 17 | (17) 0.5 | (17) BK / YE | (17) 2080 | (17) VI | (17) — |
| (18) 18 | (18) 0.5 | (18) BU | (18) 2425 | (18) I | (18) — | (18) Driver Seat Back Heating Temperature Sensor Signal | (18) 18 | (18) 0.5 | (18) BU | (18) 2425 | (18) VI | (18) — |
| (19) 19 | (19) 0.75 | (19) BN | (19) 2432 | (19) I | (19) — | (19) Driver Seat Back Heating Element Control | (19) 19 | (19) 0.75 | (19) BN | (19) 2432 | (19) VI | (19) — |
| (20) 20 | (20) 0.5 | (20) GN / VT | (20) 5906 | (20) I | (20) — | (20) Driver Seat Blower Motor Control 1 | (20) 20 | (20) 0.5 | (20) GN / VT | (20) 5906 | (20) VI | (20) — |
| (21) 21 | (21) 0.5 | (21) VT / WH | (21) 1139 | (21) I | (21) — | (21) Run/Crank Ignition 1 Voltage | (21) 21 | (21) 0.5 | (21) VT / WH | (21) 1139 | (21) VI | (21) — |
| (22) 22 | (22) 0.5 | (22) RD / GN | (22) 4440 | (22) I | (22) — | (22) Battery Positive Voltage | (22) 22 | (22) 0.5 | (22) RD / GN | (22) 4440 | (22) VI | (22) — |
| 23 | — | — | — | — | — | Not Occupied | 23 | — | — | — | — | — |
| (24) 24 | (24) 0.35 | (24) GY / OG | (24) 3946 | (24) I | (24) — | (24) Passenger Automatic Locking Retractor Switch Low Reference | (24) 24 | (24) 0.5 | (24) GY / OG | (24) 3946 | (24) VI | (24) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (25) 25 | (25) 0.35 | (25) OG / BN | (25) 3947 | (25) I | (25) — | (25) Passenger Automatic Locking Retractor Switch Signal | (25) 25 | (25) 0.5 | (25) OG / BN | (25) 3947 | (25) VI | (25) — |
| (26) 26 | (26) 0.35 | (26) BK / WH | (26) 1351 | (26) I | (26) — | (26) Signal Ground | (26) 26 | (26) 0.5 | (26) BK / WH | (26) 1351 | (26) VI | (26) — |
| (27) 27 | (27) 0.75 | (27) RD / BN | (27) 6640 | (27) II | (27) — | (27) Battery Positive Voltage | (27) 27 | (27) 0.75 | (27) RD / BN | (27) 6640 | (27) VII | (27) — |
| 28 | — | — | — | — | — | Not Occupied | 28 | — | — | — | — | — |
| (29) 29 | (29) 2.5 | (29) RD / YE | (29) 7440 | (29) III | (29) — | (29) Battery Positive Voltage | (29) 29 | (29) 2.5 | (29) RD / YE | (29) 7440 | (29) V | (29) — |
| 30 | — | — | — | — | — | Not Occupied | 30 | — | — | — | — | — |
| (31) 31 | (31) 0.5 | (31) GY | (31) 157 | (31) I | (31) — | (31) Interior Lamp Control | (31) 31 | (31) 0.5 | (31) GY | (31) 157 | (31) VI | (31) — |
| (32) 32 | (32) 0.5 | (32) OG / VT | (32) 1362 | (32) I | (32) — | (32) Passenger Seat Belt Switch Signal | (32) 32 | (32) 0.5 | (32) OG / VT | (32) 1362 | (32) VI | (32) — |
| (33) 33 | (33) 0.5 | (33) BK / OG | (33) 1363 | (33) I | (33) — | (33) Driver Seat Belt Switch Low Reference | (33) 33 | (33) 0.5 | (33) BK / OG | (33) 1363 | (33) VI | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.5 | (35) OG / GY | (35) 4956 | (35) IV | (35) — | (35) Passenger Seat Back Air Bag High Control | (35) 35 | (35) 0.5 | (35) OG / GY | (35) 4956 | (35) VI | (35) — |
| (36) 36 | (36) 0.5 | (36) BU / OG | (36) 4957 | (36) IV | (36) — | (36) Passenger Seat Back Air Bag Low Control | (36) 36 | (36) 0.5 | (36) BU / OG | (36) 4957 | (36) VI | (36) — |
| 37 - 51 | — | — | — | — | — | Not Occupied | 37 - 51 | — | — | — | — | — |
| (52) 52 | (52) 0.5 | (52) BU | (52) 4987 | (52) I | (52) — | (52) AUTOSAR CAN Bus [+] 1 Serial Data | (52) 52 | (52) 0.5 | (52) BU | (52) 4987 | (52) VI | (52) — |
| (53) 53 | (53) 0.5 | (53) WH | (53) 4986 | (53) I | (53) — | (53) AUTOSAR CAN Bus [-] 1 Serial Data | (53) 53 | (53) 0.5 | (53) WH | (53) 4986 | (53) VI | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

## X333 Front Seat Wiring Harness - Passenger to Body Wiring Harness (5W4 / 9C1)



4992168



4993301

**Connector Part Information**

- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 35327295
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35501906
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-35 (VT) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Not required | No Tool Required | No Tool Required |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |

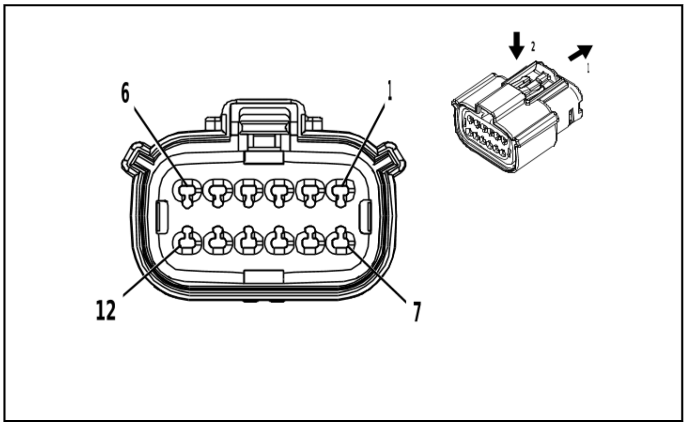
## X333 Front Seat Wiring Harness - Passenger to Body Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) BK | (1) 1250 | (1) III | (1) — | (1) Ground | (1) 1 | (1) 2.5 | (1) BK | (1) 1250 | (1) V | (1) — |
| 2 - 3 | — | — | — | — | — | Not Occupied | 2 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0.75 | (4) RD / BU | (4) 3940 | (4) I | (4) — | (4) Battery Positive Voltage | (4) 4 | (4) — | (4) — | (4) — | (4) — | (4) — |
| 5 - 6 | — | — | — | — | — | Not Occupied | 5 - 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) I | (7) — | (7) AUTOSAR CAN Bus [+] 1 Serial Data | (7) 7 | (7) 0.5 | (7) BU | (7) 4987 | (7) VI | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) I | (8) — | (8) AUTOSAR CAN Bus [-] 1 Serial Data | (8) 8 | (8) 0.5 | (8) WH | (8) 4986 | (8) VI | (8) — |
| (9) 9 | (9) 0.5 | (9) GN / VT | (9) 2857 | (9) I | (9) — | (9) Body Control Module LIN Bus 11 | (9) 9 | (9) — | (9) — | (9) — | (9) — | (9) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.5 | (11) BK / WH | (11) 1451 | (11) I | (11) — | (11) Signal Ground | (11) 11 | (11) — | (11) — | (11) — | (11) — | (11) — |
| 12 - 21 | — | — | — | — | — | Not Occupied | 12 - 21 | — | — | — | — | — |
| (22) 22 | (22) 0.5 | (22) RD / GN | (22) 4440 | (22) I | (22) — | (22) Battery Positive Voltage | (22) 22 | (22) 0.5 | (22) RD / GN | (22) 4440 | (22) VI | (22) — |
| 23 | — | — | — | — | — | Not Occupied | 23 | — | — | — | — | — |
| (24) 24 | (24) 0.35 | (24) GY / OG | (24) 3946 | (24) I | (24) — | (24) Passenger Automatic Locking Retractor Switch Low Reference | (24) 24 | (24) 0.5 | (24) GY / OG | (24) 3946 | (24) VI | (24) — |
| (25) 25 | (25) 0.35 | (25) OG / BN | (25) 3947 | (25) I | (25) — | (25) Passenger Automatic Locking Retractor Switch Signal | (25) 25 | (25) 0.5 | (25) OG / BN | (25) 3947 | (25) VI | (25) — |
| (26) 26 | (26) 0.35 | (26) BK / WH | (26) 1351 | (26) I | (26) — | (26) Signal Ground | (26) 26 | (26) 0.5 | (26) BK / WH | (26) 1351 | (26) VI | (26) — |
| (27) 27 | (27) 0.75 | (27) RD / BN | (27) 6640 | (27) II | (27) — | (27) Battery Positive Voltage | (27) 27 | (27) — | (27) — | (27) — | (27) — | (27) — |
| 28 | — | — | — | — | — | Not Occupied | 28 | — | — | — | — | — |
| (29) 29 | (29) 2.5 | (29) RD / YE | (29) 7440 | (29) III | (29) — | (29) Battery Positive Voltage | (29) 29 | (29) 2.5 | (29) RD / YE | (29) 7440 | (29) V | (29) — |
| 30 | — | — | — | — | — | Not Occupied | 30 | — | — | — | — | — |
| (31) 31 | (31) 0.5 | (31) GY | (31) 157 | (31) I | (31) — | (31) Interior Lamp Control | (31) 31 | (31) 0.5 | (31) GY | (31) 157 | (31) VI | (31) — |
| (32) 32 | (32) 0.5 | (32) OG / VT | (32) 1362 | (32) I | (32) — | (32) Passenger Seat Belt Switch Signal | (32) 32 | (32) 0.5 | (32) OG / VT | (32) 1362 | (32) VI | (32) — |
| (33) 33 | (33) 0.5 | (33) BK / OG | (33) 1363 | (33) I | (33) — | (33) Driver Seat Belt Switch Low Reference | (33) 33 | (33) 0.5 | (33) BK / OG | (33) 1363 | (33) VI | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.5 | (35) OG / GY | (35) 4956 | (35) IV | (35) — | (35) Passenger Seat Back Air Bag High Control | (35) 35 | (35) 0.5 | (35) OG / GY | (35) 4956 | (35) VI | (35) — |
| (36) 36 | (36) 0.5 | (36) BU / OG | (36) 4957 | (36) IV | (36) — | (36) Passenger Seat Back Air Bag Low Control | (36) 36 | (36) 0.5 | (36) BU / OG | (36) 4957 | (36) VI | (36) — |
| 37 - 51 | — | — | — | — | — | Not Occupied | 37 - 51 | — | — | — | — | — |
| (52) 52 | (52) 0.5 | (52) BU | (52) 4987 | (52) I | (52) — | (52) AUTOSAR CAN Bus [+] 1 Serial Data | (52) 52 | (52) 0.5 | (52) BU | (52) 4987 | (52) VI | (52) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (53) 53 | (53) 0.5 | (53) WH | (53) 4986 | (53) I | (53) — | (53) AUTOSAR CAN Bus [-] 1 Serial Data | (53) 53 | (53) 0.5 | (53) WH | (53) 4986 | (53) VI | (53) — |
| 54 - 55 | — | — | — | — | — | Not Occupied | 54 - 55 | — | — | — | — | — |

### X340A Body Wiring Harness to Rear Seat Wiring Harness - 2nd Row Left



2871860

—

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Rear Seat Wiring Harness - 2nd Row Left
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M ( BK)

## Terminal Part Information

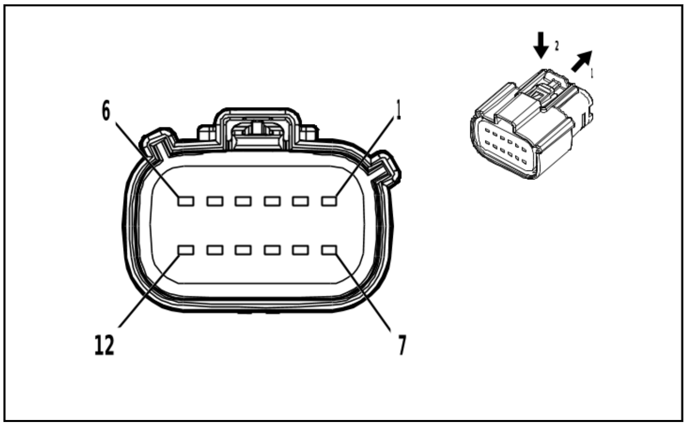
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | No Tool Required | No Tool Required |

## X340A Body Wiring Harness to Rear Seat Wiring Harness - 2nd Row Left

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) RD / GY | (1) 6240 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 1 | (1) RD / GY | (1) 6240 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) GY | (2) 2294 | (2) I | (2) — | (2) Left Rear Seat Cushion Heating Element Control | (2) 2 | (2) 0.75 | (2) GY | (2) 2294 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / BK | (3) 2446 | (3) I | (3) — | (3) Left Rear Seat Heating Element Low Reference | (3) 3 | (3) 0.75 | (3) BU / BK | (3) 2446 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / BU | (4) 7047 | (4) I | (4) — | (4) Left Rear Seat Cushion Temperature Sensor Signal | (4) 4 | (4) 0.5 | (4) WH / BU | (4) 7047 | (4) II | (4) — |

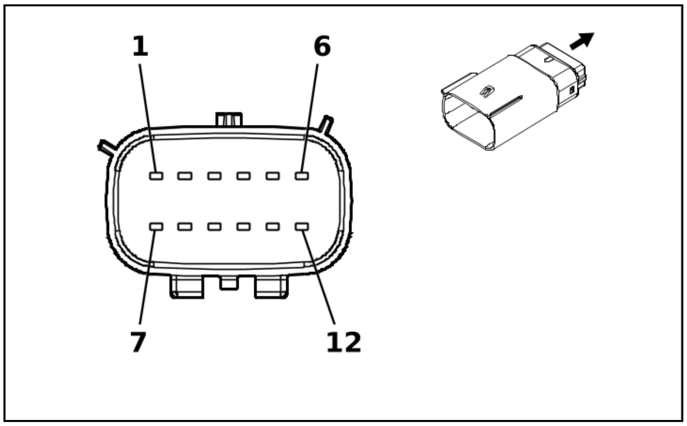
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (5) 5 | (5) 0.5 | (5) BU / WH | (5) 7048 | (5) I | (5) — | (5) Left Rear Cushion Thermistor Feedback Signal | (5) 5 | (5) 0.5 | (5) BU / WH | (5) 7048 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) GN | (6) 6808 | (6) I | (6) — | (6) Left Rear Folding Seat Motor Control | (6) 6 | (6) 0.5 | (6) GN | (6) 6808 | (6) II | (6) — |
| (7) 7 | (7) 0.75 | (7) BK | (7) 2050 | (7) I | (7) — | (7) Ground | (7) 7 | (7) 0.75 | (7) BK | (7) 2050 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) YE / OG | (8) 5161 | (8) I | (8) — | (8) Left Rear Seat Belt Switch Signal | (8) 8 | (8) 0.5 | (8) YE / OG | (8) 5161 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) BK / OG | (9) 1363 | (9) I | (9) — | (9) Driver Seat Belt Switch Low Reference | (9) 9 | (9) 0.5 | (9) BK / OG | (9) 1363 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) BU / OG | (10) 5163 | (10) I | (10) — | (10) Rear Center Seat Belt Switch Signal | (10) 10 | (10) 0.5 | (10) BU / OG | (10) 5163 | (10) II | (10) — |
| 11 - 12 | — | — | — | — | — | Not Occupied | 11 - 12 | — | — | — | — | — |

### X344A Body Wiring Harness to Rear Seat Wiring Harness - 2nd Row Right



4584248

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33472-1259
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( D-GY)



5187933

**Connector Part Information**
- Harness Type: Rear Seat Wiring Harness - 2nd Row Right
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M ( D-GY)

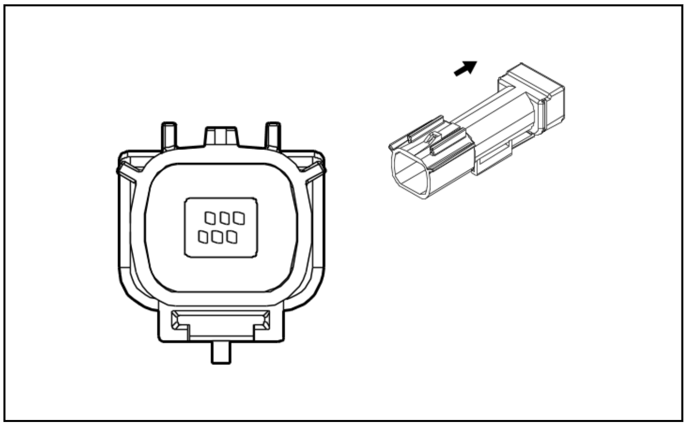
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

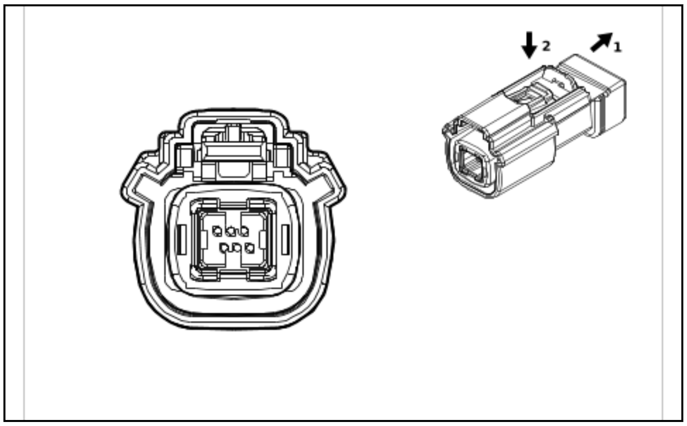
## X344A Body Wiring Harness to Rear Seat Wiring Harness - 2nd Row Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) RD / WH | (1) 5740 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.75 | (1) RD / WH | (1) 5740 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) RD / BU | (2) 6740 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.75 | (2) RD / BU | (2) 6740 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) GY | (3) 2294 | (3) I | (3) — | (3) Left Rear Seat Cushion Heating Element Control | (3) 3 | (3) 0.75 | (3) GY | (3) 2294 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GN / VT | (4) 2857 | (4) I | (4) — | (4) Body Control Module LIN Bus 11 | (4) 4 | (4) 0.5 | (4) GN / VT | (4) 2857 | (4) II | (4) — |
| (5) 5 | (5) 1 | (5) RD / GY | (5) 6240 | (5) I | (5) — | (5) Battery Positive Voltage | (5) 5 | (5) 1 | (5) RD / GY | (5) 6240 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BN / WH | (6) 6809 | (6) I | (6) — | (6) Right Rear Folding Seat Motor Control | (6) 6 | (6) 0.5 | (6) BN / WH | (6) 6809 | (6) II | (6) — |
| (7) 7 | (7) 0.75 | (7) BU / BK | (7) 2446 | (7) I | (7) — | (7) Left Rear Seat Heating Element Low Reference | (7) 7 | (7) 0.75 | (7) BU / BK | (7) 2446 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) BK | (8) 1450 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 0.75 | (8) BK | (8) 1450 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) WH / BU | (9) 7047 | (9) I | (9) — | (9) Left Rear Seat Cushion Temperature Sensor Signal | (9) 9 | (9) 0.5 | (9) WH / BU | (9) 7047 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) BU / WH | (10) 7048 | (10) I | (10) — | (10) Left Rear Cushion Thermistor Feedback Signal | (10) 10 | (10) 0.5 | (10) BU / WH | (10) 7048 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) BN / OG | (11) 5162 | (11) I | (11) — | (11) Right Rear Seat Belt Switch Signal | (11) 11 | (11) 0.5 | (11) BN / OG | (11) 5162 | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) BK / OG | (12) 1363 | (12) I | (12) — | (12) Driver Seat Belt Switch Low Reference | (12) 12 | (12) 0.5 | (12) BK / OG | (12) 1363 | (12) II | (12) — |

### X344L Body Wiring Harness to Front Seat Wiring Harness - Passenger



4477041



4477145

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 111194-1018
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way F HSAL-2 Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Front Seat Wiring Harness - Passenger
- OEM Connector: 13551209
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 6-Way M HSAL-2 Series, Sealed( BK)

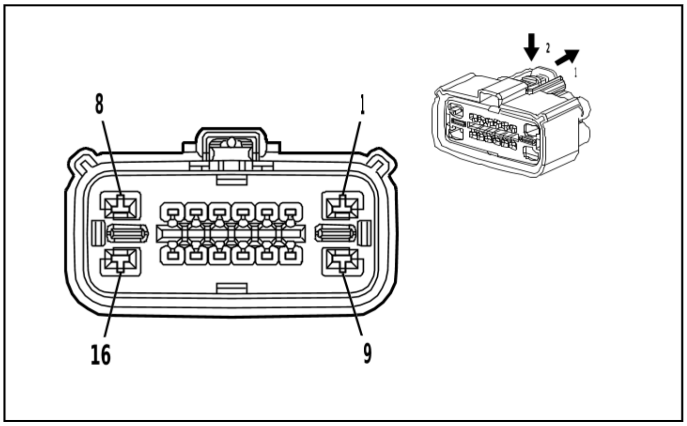
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

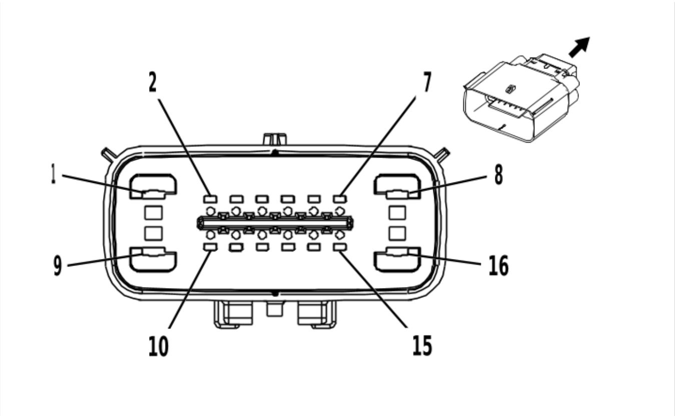
## X344L Body Wiring Harness to Front Seat Wiring Harness - Passenger

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | LVDS | — | I | — | Rear Seat Infotainment Display LVDS (Low Voltage Differential Signaling) Low Reference | — | — | LVDS | — | I | — |

## X346 Body Wiring Harness to 3rd Row Seat Wiring Harness



4283035



2373686

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 34985-4010
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed( BK)

**Connector Part Information**

- Harness Type: 3rd Row Seat Wiring Harness
- OEM Connector: 34986-2096
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed( BK)

### Terminal Part Information

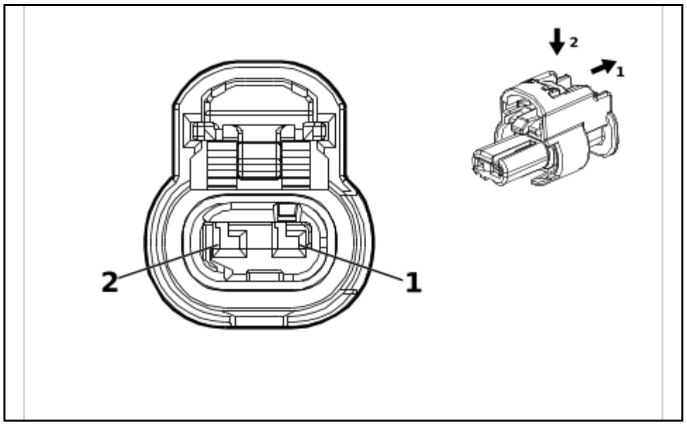
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13576377 | J-35616-35 (VT) | J-38125-12A |
| II | 85528055 | J-35616-2A (GY) | J-38125-217 |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

### X346 Body Wiring Harness to 3rd Row Seat Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / GY | (1) 7840 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / GY | (1) 7840 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) GN / BU | (3) 2856 | (3) II | (3) — | (3) Body Control Module LIN Bus 10 | (3) 3 | (3) 0.5 | (3) GN / BU | (3) 2856 | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / BU | (4) 5474 | (4) II | (4) — | (4) 3rd Row Seat Sensor Low Reference | (4) 4 | (4) 0.75 | (4) BK / BU | (4) 5474 | (4) III | (4) — |
| 5 | — | — | — | — | — | Not Occupied | 5 | — | — | — | — | — |
| (6) 6 | (6) 0.5 | (6) YE / BU | (6) 2698 | (6) II | (6) — | (6) Left 3rd Row Seat Recline Switch Signal | (6) 6 | (6) 0.5 | (6) YE / BU | (6) 2698 | (6) III | (6) — |
| (7) 7 | (7) 0.5 | (7) GN / GY | (7) 2699 | (7) II | (7) — | (7) Right 3rd Row Seat Recline Switch Signal | (7) 7 | (7) 0.5 | (7) GN / GY | (7) 2699 | (7) III | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (9) 9 | (9) 2.5 | (9) BK | (9) 1450 | (9) I | (9) — | (9) Ground | (9) 9 | (9) 2.5 | (9) BK | (9) 1450 | (9) IV | (9) — |
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.5 | (11) GN / OG | (11) 3516 | (11) II | (11) — | (11) 3rd Row Left Seat Belt Switch Signal | (11) 11 | (11) 0.5 | (11) GN / OG | (11) 3516 | (11) III | (11) — |
| (12) 12 | (12) 0.5 | (12) VT / OG | (12) 3517 | (12) II | (12) — | (12) 3rd Row Right Seat Belt Switch Signal | (12) 12 | (12) 0.5 | (12) VT / OG | (12) 3517 | (12) III | (12) — |
| (13) 13 | (13) 0.5 | (13) OG / GN | (13) 3700 | (13) II | (13) — | (13) 3rd Row Center Seat Belt Switch Signal | (13) 13 | (13) 0.5 | (13) OG / GN | (13) 3700 | (13) III | (13) — |
| 14 | — | — | — | — | — | Not Occupied | 14 | — | — | — | — | — |
| (15) 15 | (15) 0.5 | (15) BK / OG | (15) 1363 | (15) II | (15) — | (15) Driver Seat Belt Switch Low Reference | (15) 15 | (15) 0.5 | (15) BK / OG | (15) 1363 | (15) III | (15) — |
| 16 | — | — | — | — | — | Not Occupied | 16 | — | — | — | — | — |

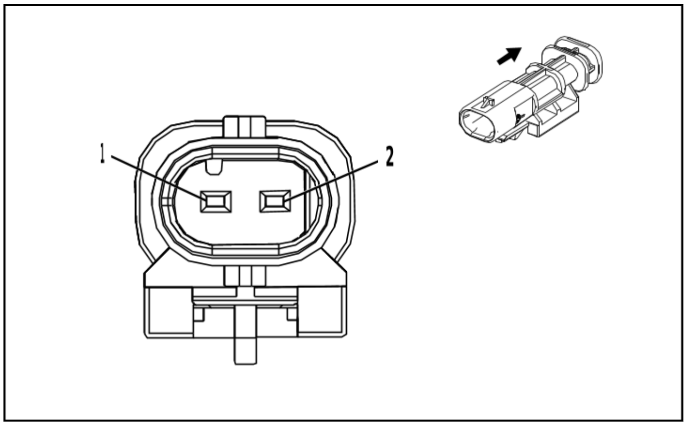
### X353 Fuel Tank Filler Door Lock Release Wiring Harness to Body Wiring Harness



4649903

**Connector Part Information**

- Harness Type: Fuel Tank Filler Door Lock Release Wiring Harness
- OEM Connector: 1-2296694-1
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way F 1.2 MCON Series, Sealed( BK)



2474755

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 2203314-1
- Service Connector: 85533165
- Description: 2-Way M 1.2 MCON Series, Sealed( BK)

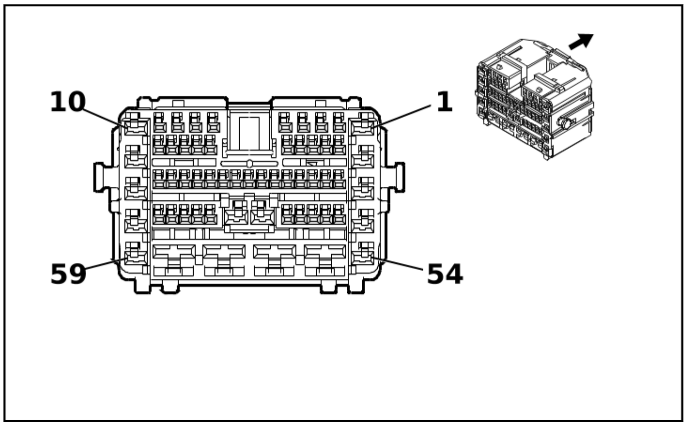
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

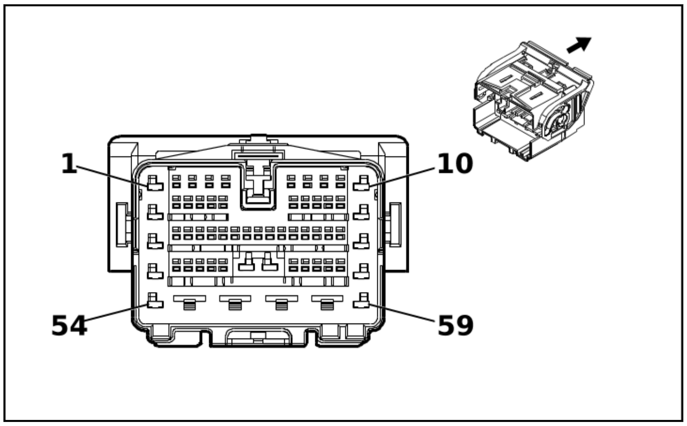
## X353 Fuel Tank Filler Door Lock Release Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BU / BK | (1) 2690 | (1) I | (1) — | (1) Fuel Door Actuator Unlock Control | (1) 1 | (1) 0.75 | (1) WH | (1) 2679 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / GY | (2) 2683 | (2) I | (2) — | (2) Unlatch Actuators Unlatch Low Reference 1 | (2) 2 | (2) 0.75 | (2) BU | (2) 2689 | (2) II | (2) — |

### X370A Headlining Trim Panel Harness to Instrument Panel Wiring Harness



5278767



5278741

**Connector Part Information**
- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 7289-7293-30
- Service Connector: 13528126
- Description: 59-Way F 1.2 MCON, 2.8, 6.3 YESC Series( BK)

**Connector Part Information**
- Harness Type: Instrument Panel Wiring Harness
- OEM Connector: 7288-7295-30
- Service Connector: 84766292
- Description: 59-Way M 1.2 MCON, 2.8, 6.3 YESC Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575835 | J-35616-42 (RD) | J-38125-11A |
| II | 19331733 | J-35616-12 (BU) | J-38125-553 |
| III | 85544080 | J-35616-4A (PU) | J-38125-11A |
| IV | Service by Cable | J-35616-12 (BU) | J-381225-215A |
| V | 13578908 | J-35616-5 (PU) | J-38125-11A |
| VI | 13580023 | J-35616-43 (RD) | J-38125-11A |
| VII | 19330704 | J-35616-13 (BU) | J-38125-215A |
| VIII | Service by Cable | J-35616-13 (BU) | J-381225-215A |

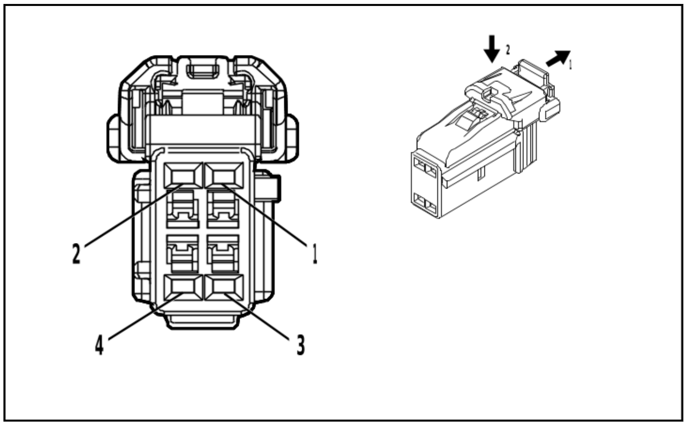
### X370A Headlining Trim Panel Harness to Instrument Panel Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / BU | (1) 4540 | (1) III | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / BU | (1) 4540 | (1) V | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / WH | (2) 24 | (2) II | (2) — | (2) Backup Lamp Control | (2) 2 | (2) 0.5 | (2) GN / WH | (2) 24 | (2) VII | (2) — |
| 3 | — | — | — | — | — | Not Occupied | 3 | — | — | — | — | — |
| (4) 4 | (4) 0.35 | (4) BU | (4) 8579 | (4) IV | (4) — | (4) Automotive Audio Bus A2B Serial Data 1 [-] | (4) 4 | (4) 0.35 | (4) GN | (4) 8579 | (4) VIII | (4) — |
| (5) 5 | (5) 0.35 | (5) GN | (5) 8580 | (5) IV | (5) — | (5) Automotive Audio Bus A2B Serial Data 1 [+] | (5) 5 | (5) 0.35 | (5) WH | (5) 8580 | (5) VIII | (5) — |
| (6) 6 | (6) 0.35 | (6) BN / WH | (6) 7209 | (6) IV | (6) — | (6) Ethernet Bus 3 [+] | (6) 6 | (6) 0.35 | (6) BN / WH | (6) 7209 | (6) VIII | (6) — |
| (7) 7 | (7) 0.35 | (7) BN | (7) 7208 | (7) IV | (7) — | (7) Ethernet Bus 3 [-] | (7) 7 | (7) 0.35 | (7) BN | (7) 7208 | (7) VIII | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 0.35 | (9) BU / VT | (9) 8900 | (9) II | (9) — | (9) Police Microphone Input Signal | (9) 9 | (9) 0.5 | (9) BU / VT | (9) 8900 | (9) VII | (9) — |
| (10) 10 | (10) 2.5 | (10) BK | (10) 1850 | (10) III | (10) — | (10) Ground | (10) 10 | (10) 2.5 | (10) BK | (10) 1050 | (10) V | (10) — |
| (11) 11 | (11) 0.5 | (11) RD / YE | (11) 240 | (11) III | (11) — | (11) Battery Positive Voltage | (11) 11 | (11) 1 | (11) RD / YE | (11) 240 | (11) V | (11) — |
| (12) 12 | (12) 0.35 | (12) WH / GY | (12) 4104 | (12) II | (12) — | (12) AUTOSAR CAN Bus [-] 8 Serial Data<br>(12) AUTOSAR CAN Bus [-] 8 Serial Data | (12) 12 | (12) 0.5<br>(12) 0.35 | (12) WH / GY<br>(12) WH / GY | (12) 4104<br>(12) 4104 | (12) VII<br>(12) VII | (12) - UKL<br>(12) UKL |
| (13) 13 | (13) 0.35 | (13) BU / GY | (13) 4105 | (13) II | (13) — | (13) AUTOSAR CAN Bus [+] 8 Serial Data<br>(13) AUTOSAR CAN Bus [+] 8 Serial Data | (13) 13 | (13) 0.5<br>(13) 0.35 | (13) BU / GY<br>(13) BU / GY | (13) 4105<br>(13) 4105 | (13) VII<br>(13) VII | (13) - UKL<br>(13) UKL |
| 14 | — | — | — | — | — | Not Occupied | 14 | — | — | — | — | — |
| (15) 15 | (15) 0.35 | (15) GN | (15) 8580 | (15) IV | (15) — | (15) Automotive Audio Bus A2B Serial Data 1 [+] | (15) 15 | (15) 0.35 | (15) WH | (15) 8580 | (15) VIII | (15) — |
| (16) 16 | (16) 0.35 | (16) BU | (16) 8579 | (16) IV | (16) — | (16) Automotive Audio Bus A2B Serial Data 1 [-] | (16) 16 | (16) 0.35 | (16) GN | (16) 8579 | (16) VIII | (16) — |
| 17 - 18 | — | — | — | — | — | Not Occupied | 17 - 18 | — | — | — | — | — |

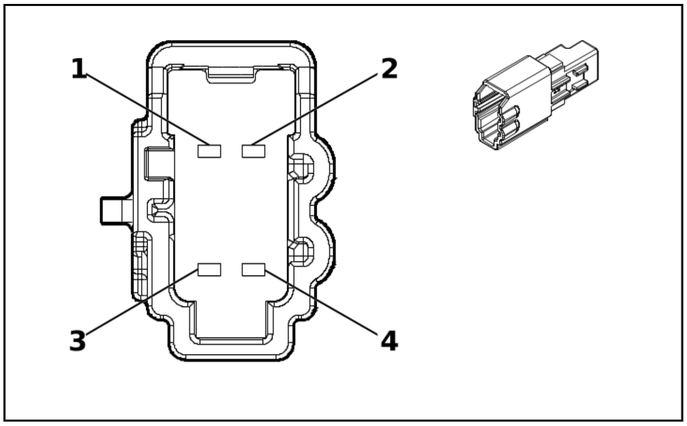
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (19) 19 | (19) 0.35<br>(19) 0.35 | (19) BU / WH<br>(19) GN / BK | (19) 8899<br>(19) 10652 | (19) II<br>(19) II | (19) 5W4/ 9C1<br>(19) UG1 | (19) Police Microphone Data Signal<br>(19) Radio LIN Bus 1 | (19) 19 | (19) 0.5<br>(19) 0.35 | (19) BU / WH<br>(19) GN / BK | (19) 8899<br>(19) 10652 | (19) VII<br>(19) VII | (19) 5W4/ 9C1<br>(19) UG1 |
| (20) 20 | (20) 0.35 | (20) WH | (20) 4978 | (20) II | (20) — | (20) AUTOSAR CAN Bus [-] 2 Serial Data | (20) 20 | (20) 0.35 | (20) WH | (20) 4978 | (20) VII | (20) — |
| (21) 21 | (21) 0.35 | (21) BU / YE | (21) 4979 | (21) II | (21) — | (21) AUTOSAR CAN Bus [+] 2 Serial Data | (21) 21 | (21) 0.35 | (21) BU / YE | (21) 4979 | (21) VII | (21) — |
| 22 - 23 | — | — | — | — | — | Not Occupied | 22 - 23 | — | — | — | — | — |
| (24) 24 | (24) 0.35 | (24) BU / YE | (24) 4979 | (24) II | (24) — | (24) AUTOSAR CAN Bus [+] 2 Serial Data | (24) 24 | (24) 0.5 | (24) BU / YE | (24) 4979 | (24) VII | (24) — |
| (25) 25 | (25) 0.35 | (25) WH | (25) 4978 | (25) II | (25) — | (25) AUTOSAR CAN Bus [-] 2 Serial Data | (25) 25 | (25) 0.5 | (25) WH | (25) 4978 | (25) VII | (25) — |
| (26) 26 | (26) 0.35 | (26) YE / VT | (26) 2516 | (26) II | (26) — | (26) Telematics Switch Green LED Indicator Control | (26) 26 | (26) 0.35 | (26) YE / VT | (26) 2516 | (26) VII | (26) — |
| (27) 27 | (27) 0.35 | (27) GN / WH | (27) 2514 | (27) II | (27) — | (27) Telematics Switch Signal | (27) 27 | (27) 0.35 | (27) GN / WH | (27) 2514 | (27) VII | (27) — |
| (28) 28 | (28) 0.35 | (28) GN / BK | (28) 2515 | (28) II | (28) — | (28) Telematics Switch Supply Voltage | (28) 28 | (28) 0.35 | (28) GN / BK | (28) 2515 | (28) VII | (28) — |
| (29) 29 | (29) 0.35 | (29) BN / WH | (29) 2517 | (29) II | (29) — | (29) Telematics Switch Red LED Indicator Control | (29) 29 | (29) 0.35 | (29) BN / WH | (29) 2517 | (29) VII | (29) — |
| (30) 30 | (30) 0.5<br>(30) 0.35 | (30) BK / WH<br>(30) BK / WH | (30) 1851<br>(30) 1851 | (30) II<br>(30) II | (30) - DRZ<br>(30) DRZ | (30) Signal Ground<br>(30) Signal Ground | (30) 30 | (30) 0.35 | (30) BK / WH | (30) 1851 | (30) VII | (30) — |
| (31) 31 | (31) 0.35 | (31) BK / YE | (31) 1691 | (31) II | (31) — | (31) Automatic Day/Night Mirror Low Reference | (31) 31 | (31) 0.35 | (31) BK / YE | (31) 1691 | (31) VII | (31) — |
| (32) 32 | (32) 0.35 | (32) YE / WH | (32) 1690 | (32) II | (32) — | (32) Mirror Dimming Signal | (32) 32 | (32) 0.35 | (32) YE / WH | (32) 1690 | (32) VII | (32) — |
| (33) 33 | (33) 0.5 | (33) GN / WH | (33) 4115 | (33) II | (33) — | (33) Body Control Module LIN Bus 5 | (33) 33 | (33) 0.35 | (33) GN / WH | (33) 4115 | (33) VII | (33) — |
| (34) 34 | (34) 0.35 | (34) GN / WH | (34) 2854 | (34) II | (34) — | (34) Body Control Module LIN Bus 8 | (34) 34 | (34) 0.35 | (34) GN / WH | (34) 2854 | (34) VII | (34) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (35) 35 | (35) 0.5 | (35) BU | (35) 655 | (35) II | (35) — | (35) Cellular Telephone Microphone Signal | (35) 35 | (35) 0.35 | (35) BU | (35) 655 | (35) VII | (35) — |
| (36) 36 | (36) 0.5 | (36) BK / BN | (36) 654 | (36) II | (36) — | (36) Cellular Telephone Microphone Low Reference | (36) 36 | (36) 0.35 | (36) BK / BN | (36) 654 | (36) VII | (36) — |
| (37) 37 | (37) 0.35 | (37) BU / GY | (37) 4105 | (37) II | (37) — | (37) AUTOSAR CAN Bus [+] 8 Serial Data | (37) 37 | (37) 0.35 | (37) BU / GY | (37) 4105 | (37) VII | (37) — |
| (38) 38 | (38) 0.35 | (38) WH / GY | (38) 4104 | (38) II | (38) — | (38) AUTOSAR CAN Bus [-] 8 Serial Data | (38) 38 | (38) 0.35 | (38) WH / GY | (38) 4104 | (38) VII | (38) — |
| 39 - 54 | — | — | — | — | — | Not Occupied | 39 - 54 | — | — | — | — | — |
| (55) 55 | (55) 0.5 | (55) BK | (55) 1850 | (55) I | (55) — | (55) Ground | (55) 55 | (55) 0.5 | (55) BK | (55) 1050 | (55) VI | (55) — |
| 56 - 57 | — | — | — | — | — | Not Occupied | 56 - 57 | — | — | — | — | — |
| (58) 58 | (58) 0.5 | (58) VT / WH | (58) 239 | (58) I | (58) — | (58) Run/Crank Ignition 1 Voltage | (58) 58 | (58) 0.5 | (58) VT / WH | (58) 239 | (58) VI | (58) — |
| 59 | — | — | — | — | — | Not Occupied | 59 | — | — | — | — | — |

### X370B Windshield Outside Moisture-Ambient Light and Humidity Sensor to Headlining Trim Panel Harness



4872683



5360963

**Connector Part Information**

- Harness Type: Windshield Outside Moisture-Ambient Light and Humidity Sensor
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 6098-9046
- Service Connector: 84847258
- Description: 4-Way M 1.2 MCON Series( BK)

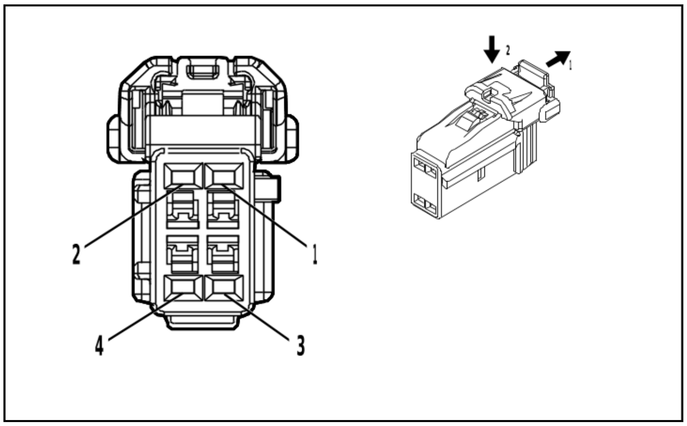
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-17 (L-GN) | No Tool Required |

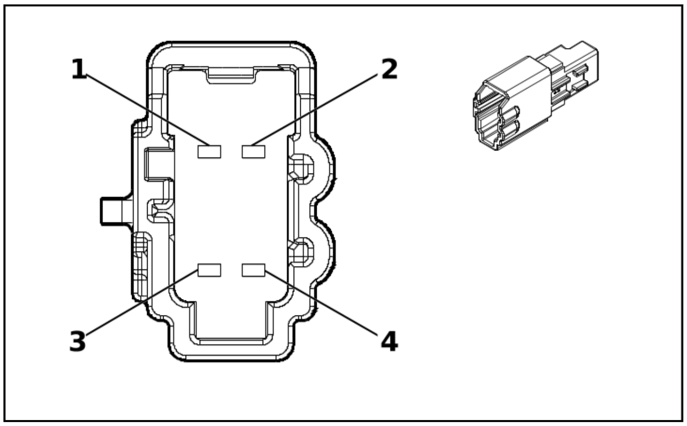
## X370B Windshield Outside Moisture-Ambient Light and Humidity Sensor to Headlining Trim Panel Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) RD / VT | (1) 240 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / YE | (1) 240 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) GN / BN | (2) 4115 | (2) I | (2) — | (2) Body Control Module LIN Bus 5 | (2) 2 | (2) 0.5 | (2) GN / WH | (2) 4115 | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) BK | (3) 850 | (3) I | (3) — | (3) Ground | (3) 3 | (3) 0.5 | (3) BK / WH | (3) 1851 | (3) II | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |

### X372 Headlining Trim Panel Harness to Police Accessories Wiring Harness (5W4 / 9C1)



4872683



5360963

**Connector Part Information**
- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 6098-8435
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.2 Series( BK)

**Connector Part Information**
- Harness Type: Police Accessories Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M ( BK)

## Terminal Part Information

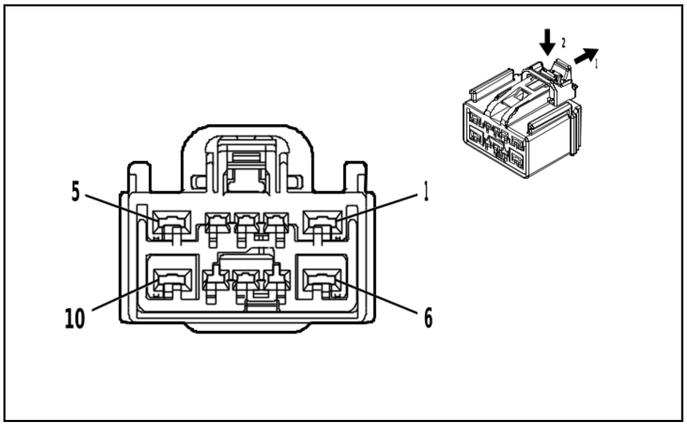
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X372 Headlining Trim Panel Harness to Police Accessories Wiring Harness (5W4 / 9C1)

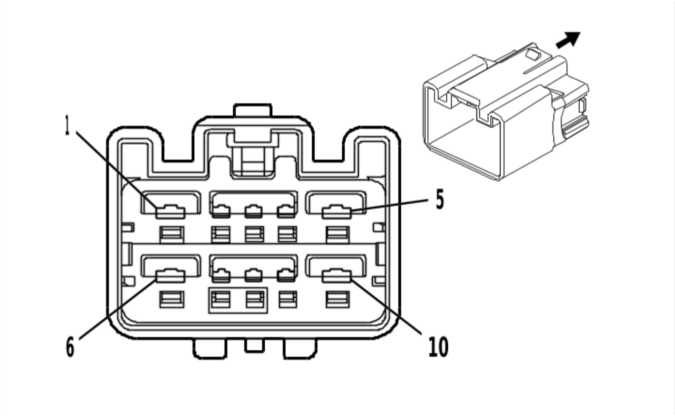
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.35 | (1) BK | (1) 1850 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0.35 | (1) BK | (1) 1850 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) BU / WH | (2) 8899 | (2) I | (2) — | (2) Police Microphone Data Signal | (2) 2 | (2) 0.35 | (2) BU / WH | (2) 8899 | (2) II | (2) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.35 | (3) BU / VT | (3) 8900 | (3) I | (3) — | (3) Police Microphone Input Signal | (3) 3 | (3) 0.35 | (3) BU / VT | (3) 8900 | (3) II | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |

### X375 Sunroof Wiring Harness to Headlining Trim Panel Harness (C3U)



5020939



1851890

**Connector Part Information**

- Harness Type: Sunroof Wiring Harness
- OEM Connector: 7289-9153-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 Kaizen Series( L-GY)

**Connector Part Information**

- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 7282-6459-40
- Service Connector: 89047070
- Description: 10-Way M 1.5, 2.8 Kaizen Series( L-GY)

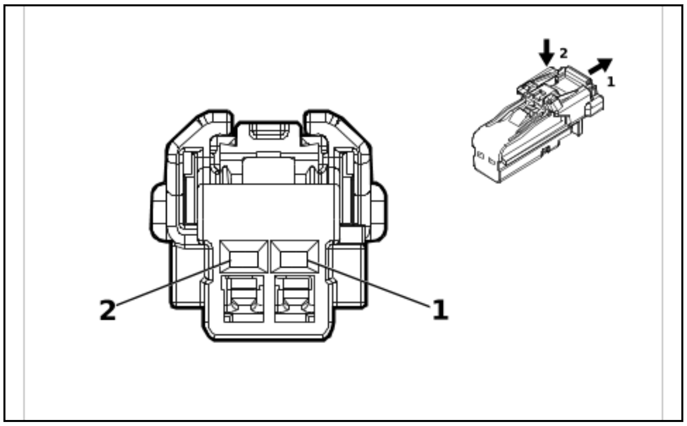
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-4A (PU) | No Tool Required |
| II | 13578907 | J-35616-3 (GY) | J-38125-215A |
| III | 13578908 | J-35616-5 (PU) | J-38125-11A |

## X375 Sunroof Wiring Harness to Headlining Trim Panel Harness (C3U)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 3 | (1) RD / BU | (1) 4540 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / BU | (1) 4540 | (1) III | (1) — |
| 2 - 4 | — | — | — | — | — | Not Occupied | 2 - 4 | — | — | — | — | — |
| (5) 5 | (5) 3 | (5) BK | (5) 1850 | (5) I | (5) — | (5) Ground | (5) 5 | (5) 2.5 | (5) BK | (5) 1850 | (5) III | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.35 | (7) BU | (7) 2854 | (7) I | (7) — | (7) Body Control Module LIN Bus 8 | (7) 7 | (7) 0.35 | (7) GN / WH | (7) 2854 | (7) II | (7) — |
| 8 - 10 | — | — | — | — | — | Not Occupied | 8 - 10 | — | — | — | — | — |

## X385 Headlining Trim Panel Harness to Police Accessories Wiring Harness (5W4 / 9C1)



4115691

—

**Connector Part Information**
- Harness Type: Headlining Trim Panel Harness
- OEM Connector: 6098-8988
- Service Connector: 87816612
- Description: 2-Way F 1.2 MCON Series( BK)

**Connector Part Information**
- Harness Type: Police Accessories Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M ( BK)

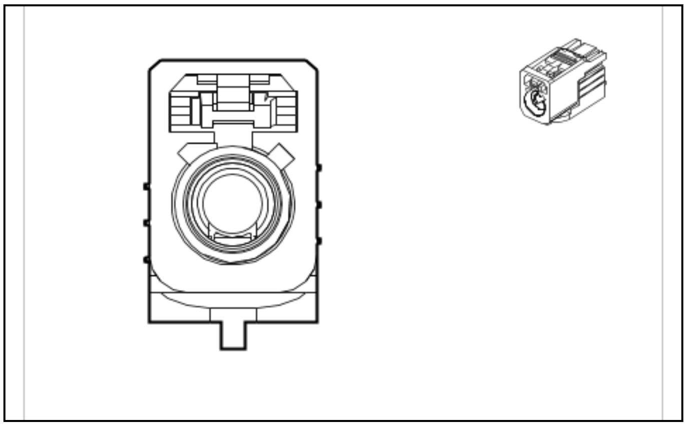
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X385 Headlining Trim Panel Harness to Police Accessories Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0.5 | (1) BK | (1) 1850 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) RD / YE | (2) 240 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.5 | (2) RD / YE | (2) 240 | (2) II | (2) — |

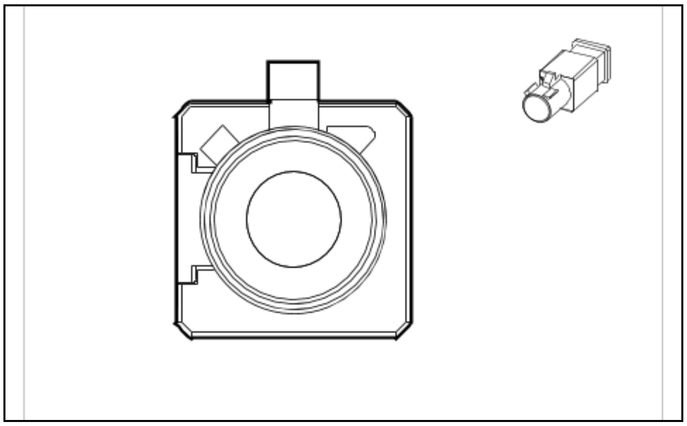
### X396 Instrument Panel Wiring Harness to Antenna Coaxial Cable



5633209

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351010
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BK)



6410256

**Connector Part Information**

- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 59Z114-000-A
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BK)

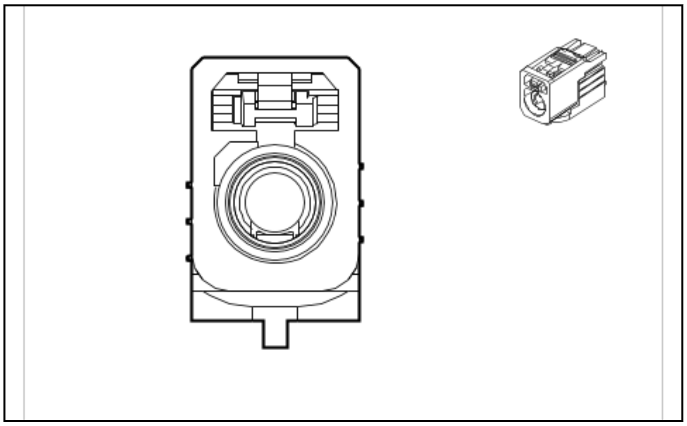
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X396 Instrument Panel Wiring Harness to Antenna Coaxial Cable

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | (AM/FM) Antenna RF Signal | — | — | Coax Cable | — | I | — |

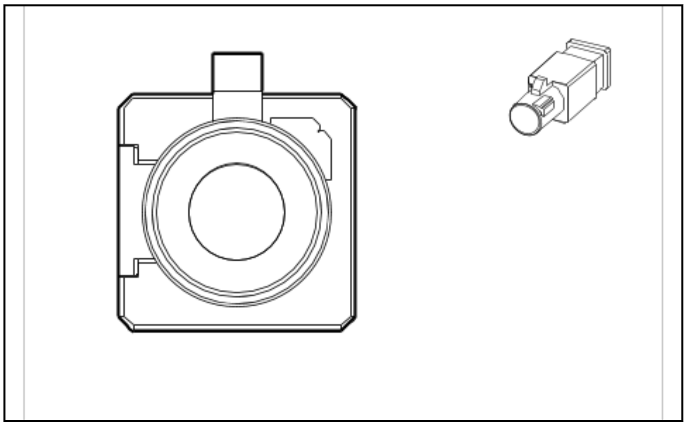
### X397 Instrument Panel Wiring Harness to Antenna Coaxial Cable



5633912

**Connector Part Information**

- Harness Type: Instrument Panel Wiring Harness COAX
- OEM Connector: 33351016
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( GN)



6825753

**Connector Part Information**

- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 59Z114-000-E
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( GN)

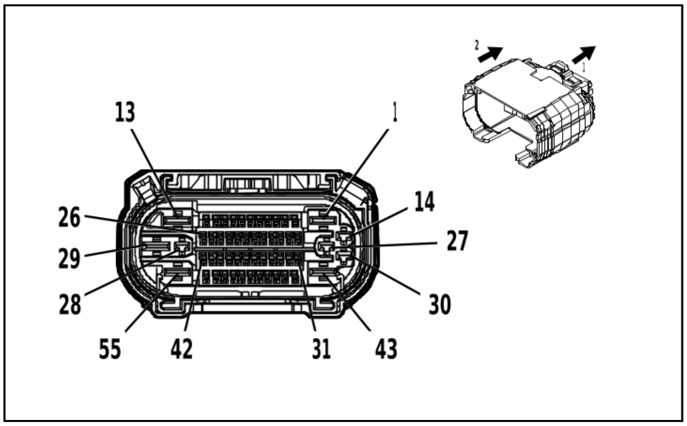
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

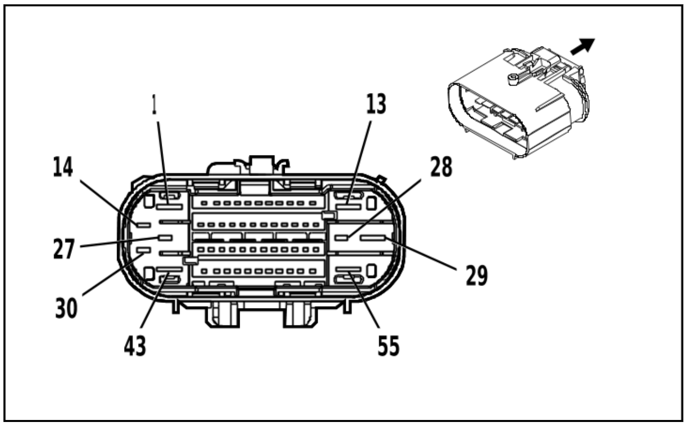
## X397 Instrument Panel Wiring Harness to Antenna Coaxial Cable

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | (DAB/DMB) Coaxial Antenna DAB Signal | — | — | Coax Cable | — | I | — |

### X400 Chassis Wiring Harness to Body Wiring Harness



4992168



4993301

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13522700
- Service Connector: 19371185
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35205173
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19332901 | J-35616-35 (VT) | J-38125-212 |
| II | 19370818 | J-35616-12 (BU) | J-38125-553 |
| III | 19371217 | J-35616-12 (BU) | J-38125-553 |
| IV | 84634921 | J-35616-42 (RD) | J-38125-212 |
| V | 84847992 | J-35616-32 (OG) | J-38125-36 |
| VI | 84867140 | J-35616-13 (BU) | J-38125-553 |
| VII | 84992391 | J-35616-5 (PU) | J-38125-36 |

## X400 Chassis Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 4 | (1) GN / VT | (1) 1988 | (1) IV | (1) — | (1) Right Park Brake Motor Apply Control | (1) 1 | (1) 2.5 | (1) GN / VT | (1) 1988 | (1) V | (1) — |
| (2) 2 | (2) 0.75 | (2) GN / BU | (2) 2733 | (2) II | (2) — | (2) Brake System Control Module LIN Bus 2 | (2) 2 | (2) 0.75 | (2) GN / BU | (2) 2733 | (2) VI | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / GY | (3) 4054 | (3) II | (3) — | (3) Private Serial Data Powertrain CAN Bus [-] Serial Data | (3) 3 | (3) 0.35 | (3) BU / GY | (3) 4054 | (3) VI | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4055 | (4) II | (4) — | (4) Private Serial Data Powertrain CAN Bus [+] Serial Data | (4) 4 | (4) 0.35 | (4) WH | (4) 4055 | (4) VI | (4) — |
| 5 - 7 | — | — | — | — | — | Not Occupied | 5 - 7 | — | — | — | — | — |

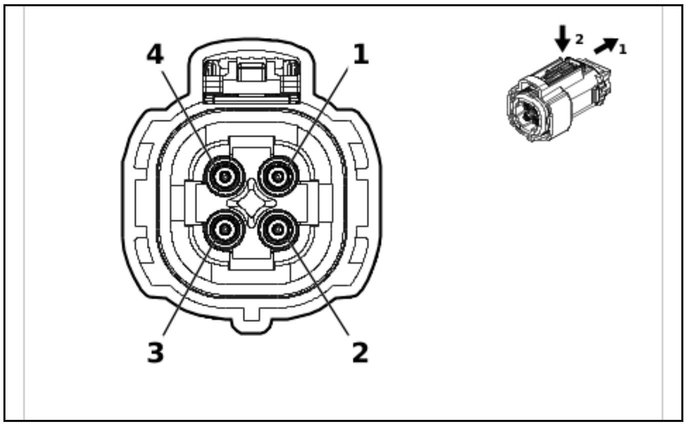
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.5 | (8) BU / WH | (8) 7978 | (8) II | (8) — | (8) Axle Differential Lock Motor Temperature Sensor Signal | (8) 8 | (8) 0.5 | (8) BU / WH | (8) 7978 | (8) VI | (8) — |
| (9) 9 | (9) 0.5<br>(9) 0.5 | (9) BU<br>(9) BU / WH | (9) 4987<br>(9) 4987 | (9) II<br>(9) II | (9) - B3L<br>(9) B3L | (9) AUTOSAR CAN Bus [+] 1 Serial Data<br>(9) AUTOSAR CAN Bus [+] 1 Serial Data | (9) 9 | (9) 0.5 | (9) BU | (9) 4987 | (9) VI | (9) — |
| (10) 10 | (10) 0.5<br>(10) 0.5 | (10) WH<br>(10) WH / VT | (10) 4986<br>(10) 4986 | (10) II<br>(10) II | (10) - B3L<br>(10) B3L | (10) AUTOSAR CAN Bus [-] 1 Serial Data<br>(10) AUTOSAR CAN Bus [-] 1 Serial Data | (10) 10 | (10) 0.5 | (10) WH | (10) 4986 | (10) VI | (10) — |
| (11) 11 | (11) 0.75 | (11) GN / YE | (11) 1616 | (11) II | (11) — | (11) Rear Brake Pad Wear Sensor Signal | (11) 11 | (11) 0.75 | (11) GN / YE | (11) 1616 | (11) VI | (11) — |
| (12) 12 | (12) 0.75 | (12) BN / BU | (12) 1602 | (12) II | (12) — | (12) Front Brake Pad Wear Sensor Signal | (12) 12 | (12) 0.75 | (12) BN / BU | (12) 1602 | (12) VI | (12) — |
| (13) 13 | (13) 4 | (13) WH | (13) 2001 | (13) IV | (13) — | (13) Left Park Brake Motor Apply Control | (13) 13 | (13) 2.5 | (13) WH | (13) 2001 | (13) V | (13) — |
| (14) 14 | (14) 2.5 | (14) RD / VT | (14) 1242 | (14) I | (14) — | (14) Battery Positive Voltage | (14) 14 | (14) 2.5 | (14) RD / VT | (14) 1242 | (14) VII | (14) — |
| 15 - 20 | — | — | — | — | — | Not Occupied | 15 - 20 | — | — | — | — | — |
| (21) 21 | (21) 0.5 | (21) WH | (21) 4976 | (21) II | (21) — | (21) AUTOSAR CAN Bus [-] 3 Serial Data | (21) 21 | (21) 0.5 | (21) WH | (21) 4976 | (21) VI | (21) — |
| (22) 22 | (22) 0.5 | (22) BU / BK | (22) 4977 | (22) II | (22) — | (22) AUTOSAR CAN Bus [+] 3 Serial Data | (22) 22 | (22) 0.5 | (22) BU / BK | (22) 4977 | (22) VI | (22) — |
| (23) 23 | (23) 0.75 | (23) WH / RD | (23) 7973 | (23) II | (23) — | (23) Axle Differential Lock Motor Position Sensor High Reference | (23) 23 | (23) 0.75 | (23) WH / RD | (23) 7973 | (23) VI | (23) — |
| (24) 24 | (24) 0.5<br>(24) 0.5 | (24) BU<br>(24) BU / VT | (24) 4101<br>(24) 4101 | (24) II<br>(24) II | (24) - UET<br>(24) UET | (24) AUTOSAR CAN Bus [+] 4 Serial Data<br>(24) AUTOSAR CAN Bus [+] 4 Serial Data | (24) 24 | (24) 0.35 | (24) BU / VT | (24) 4101 | (24) VI | (24) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (25) 25 | (25) 0.5<br>(25) 0.5 | (25) WH<br>(25) WH / GN | (25) 4100<br>(25) 4100 | (25) II<br>(25) II | (25) - UET<br>(25) UET | (25) AUTOSAR CAN Bus [-] 4 Serial Data<br>(25) AUTOSAR CAN Bus [-] 4 Serial Data | (25) 25 | (25) 0.35 | (25) WH | (25) 4100 | (25) VI | (25) — |
| (26) 26 | (26) 0.5 | (26) BK | (26) 7970 | (26) II | (26) — | (26) Axle Differential Lock Control Shield | (26) 26 | (26) 0.5 | (26) BK | (26) 7970 | (26) VI | (26) — |
| (27) 27 | (27) — | (27) — | (27) — | (27) — | (27) — | (27) Ground | (27) 27 | (27) 2.5 | (27) BK | (27) 150 | (27) VII | (27) — |
| (28) 28 | (28) 2.5 | (28) GY / BN | (28) 7968 | (28) I | (28) — | (28) Axle Differential Lock Control High | (28) 28 | (28) 2.5 | (28) GY / BN | (28) 7968 | (28) VII | (28) — |
| (29) 29 | (29) 4 | (29) GY / BK | (29) 4369 | (29) IV | (29) — | (29) Left Park Brake Motor Low Reference | (29) 29 | (29) 2.5 | (29) GY / BK | (29) 4369 | (29) V | (29) — |
| (30) 30 | (30) 2.5 | (30) YE / WH | (30) 7969 | (30) I | (30) — | (30) Axle Differential Lock Control Low | (30) 30 | (30) 2.5 | (30) YE / WH | (30) 7969 | (30) VII | (30) — |
| (31) 31 | (31) 0.5 | (31) GN / BN | (31) 7975 | (31) II | (31) — | (31) Axle Differential Lock Motor Position Sensor Signal 1 | (31) 31 | (31) 0.5 | (31) GN / BN | (31) 7975 | (31) VI | (31) — |
| (32) 32 | (32) 0.5 | (32) GY | (32) 7976 | (32) II | (32) — | (32) Axle Differential Lock Motor Position Sensor Signal 2 | (32) 32 | (32) 0.5 | (32) GY | (32) 7976 | (32) VI | (32) — |
| (33) 33 | (33) 0.5 | (33) YE | (33) 872 | (33) II | (33) — | (33) Right Front Wheel Speed Sensor Signal | (33) 33 | (33) 0.5 | (33) YE | (33) 872 | (33) VI | (33) — |
| (34) 34 | (34) 0.5 | (34) GY / BN | (34) 7065 | (34) II | (34) — | (34) Right Front Wheel Speed Sensor Control | (34) 34 | (34) 0.5 | (34) GY / BN | (34) 7065 | (34) VI | (34) — |
| (35) 35 | (35) 0.75 | (35) VT / BK | (35) 7972 | (35) II | (35) — | (35) Axle Differential Lock Motor Brake Control Low | (35) 35 | (35) 0.75 | (35) VT / BK | (35) 7972 | (35) VI | (35) — |
| (36) 36 | (36) 0.75 | (36) WH | (36) 7971 | (36) II | (36) — | (36) Axle Differential Lock Motor Brake Control High | (36) 36 | (36) 0.75 | (36) WH | (36) 7971 | (36) VI | (36) — |
| (37) 37 | (37) 0.5 | (37) GY | (37) 830 | (37) II | (37) — | (37) Left Front Wheel Speed Sensor Signal | (37) 37 | (37) 0.5 | (37) GY | (37) 830 | (37) VI | (37) — |

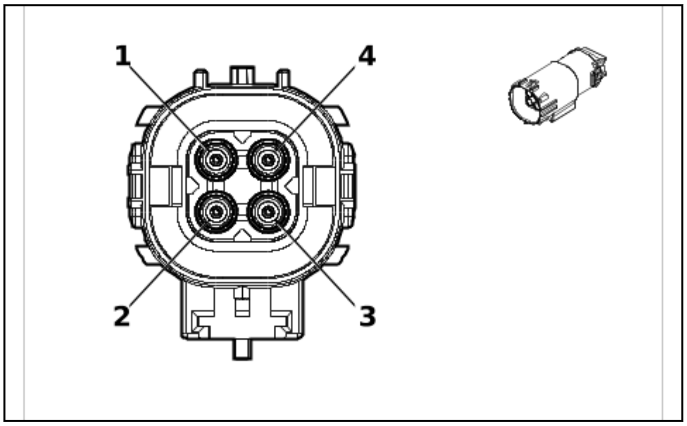
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (38) 38 | (38) 0.5 | (38) GY / WH | (38) 7064 | (38) II | (38) — | (38) Left Front Wheel Speed Sensor Control | (38) 38 | (38) 0.5 | (38) GY / WH | (38) 7064 | (38) VI | (38) — |
| (39) 39 | (39) 0.5 | (39) WH | (39) 4978 | (39) II | (39) — | (39) AUTOSAR CAN Bus [-] 2 Serial Data | (39) 39 | (39) 0.35 | (39) WH | (39) 4978 | (39) VI | (39) — |
| (40) 40 | (40) 0.5 | (40) BK / YE | (40) 7977 | (40) II | (40) — | (40) Axle Differential Lock Motor Temperature Sensor Low Reference | (40) 40 | (40) 0.5 | (40) BK / YE | (40) 7977 | (40) VI | (40) — |
| (41) 41 | (41) 0.5 | (41) BU / GN | (41) 4987 | (41) II | (41) LZ0 | (41) AUTOSAR CAN Bus [+] 1 Serial Data | (41) 41 | (41) 0.5 | (41) BU | (41) 4987 | (41) VI | (41) — |
| (42) 42 | (42) 0.5 | (42) WH / BU | (42) 4986 | (42) II | (42) LZ0 | (42) AUTOSAR CAN Bus [-] 1 Serial Data | (42) 42 | (42) 0.5 | (42) WH | (42) 4986 | (42) VI | (42) — |
| (43) 43 | (43) 4 | (43) GY | (43) 4368 | (43) IV | (43) — | (43) Right Park Brake Motor Low Reference | (43) 43 | (43) 2.5 | (43) GY | (43) 4368 | (43) V | (43) — |
| (44) 44 | (44) 1.5 | (44) WH / BK | (44) 2223 | (44) III | (44) — | (44) Trailer Brake Apply Signal | (44) 44 | (44) 0.75 | (44) WH / BK | (44) 2223 | (44) VI | (44) — |
| (45) 45 | (45) 0.5 | (45) BK / VT | (45) 7974 | (45) II | (45) — | (45) Axle Differential Lock Motor Position Sensor Low Reference | (45) 45 | (45) 0.5 | (45) BK / VT | (45) 7974 | (45) VI | (45) — |
| (46) 46 | (46) 0.5 | (46) GY / BK | (46) 7127 | (46) II | (46) — | (46) Left Rear Wheel Speed Sensor Control | (46) 46 | (46) 0.5 | (46) GY / BK | (46) 7127 | (46) VI | (46) — |
| (47) 47 | (47) 0.5 | (47) BU | (47) 884 | (47) II | (47) — | (47) Left Rear Wheel Speed Sensor Signal | (47) 47 | (47) 0.5 | (47) BU | (47) 884 | (47) VI | (47) — |
| (48) 48 | (48) 0.5 | (48) WH | (48) 4100 | (48) II | (48) — | (48) AUTOSAR CAN Bus [-] 4 Serial Data<br>(48) AUTOSAR CAN Bus [-] 4 Serial Data | (48) 48 | (48) 0.35<br>(48) 0.5 | (48) WH<br>(48) WH | (48) 4100<br>(48) 4100 | (48) VI<br>(48) VI | (48) - UET<br>(48) UET |
| (49) 49 | (49) 0.5 | (49) BU / VT | (49) 4101 | (49) II | (49) — | (49) AUTOSAR CAN Bus [+] 4 Serial Data<br>(49) AUTOSAR CAN Bus [+] 4 Serial Data | (49) 49 | (49) 0.35<br>(49) 0.5 | (49) BU / VT<br>(49) BU / VT | (49) 4101<br>(49) 4101 | (49) VI<br>(49) VI | (49) - UET<br>(49) UET |
| (50) 50 | (50) 0.5 | (50) VT / GN | (50) 4320 | (50) II | (50) — | (50) Powertrain Sensor Bus Enable | (50) 50 | (50) 0.35 | (50) VT / GN | (50) 4320 | (50) VI | (50) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (51) 51 | (51) 0.5 | (51) GY / YE | (51) 7128 | (51) II | (51) — | (51) Right Rear Wheel Speed Sensor Control | (51) 51 | (51) 0.5 | (51) GY / YE | (51) 7128 | (51) VI | (51) — |
| (52) 52 | (52) 0.5 | (52) VT | (52) 882 | (52) II | (52) — | (52) Right Rear Wheel Speed Sensor Signal | (52) 52 | (52) 0.5 | (52) VT | (52) 882 | (52) VI | (52) — |
| (53) 53 | (53) 0.5 | (53) BU / YE | (53) 4979 | (53) II | (53) — | (53) AUTOSAR CAN Bus [+] 2 Serial Data | (53) 53 | (53) 0.35 | (53) BU / YE | (53) 4979 | (53) VI | (53) — |
| (54) 54 | (54) 1.5 | (54) YE / BK | (54) 2224 | (54) III | (54) — | (54) Trailer Brake Enable Signal | (54) 54 | (54) 0.75 | (54) YE / BK | (54) 2224 | (54) VI | (54) — |
| (55) 55 | (55) — | (55) — | (55) — | (55) — | (55) — | (55) Battery Positive Voltage | (55) 55 | (55) 4 | (55) RD / YE | (55) 442 | (55) V | (55) — |

### X402 Chassis Wiring Harness to Body Wiring Harness



6640687



6642979

**Connector Part Information**

- Harness Type: Chassis Wiring Harness COAX
- OEM Connector: 13563001
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( BN)

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: AMZ14R-C02-F
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way M Mini Coax Type( BN)

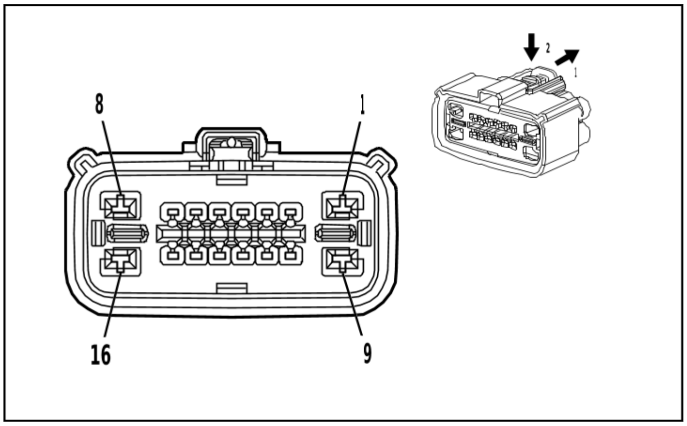
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

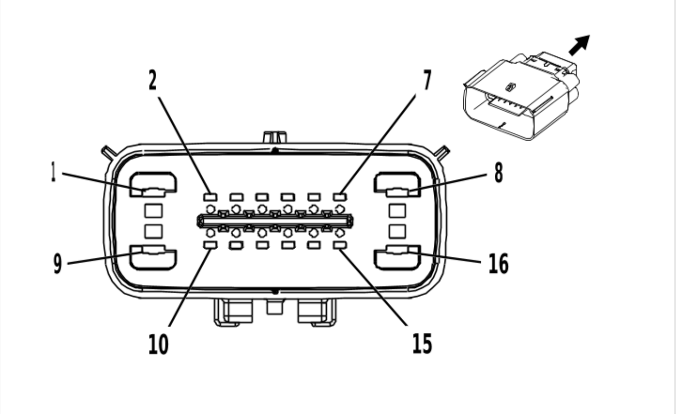
## X402 Chassis Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | — | — | Not Occupied | 1 - 4 | — | — | — | — | — |
| (1) 1 | (1) 0.4 | (1) Coax Cable | (1) 2421 | (1) I | (1) — | (1) Trailer Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) 1 | (1) 0.4 | (1) Coax Cable | (1) 2421 | (1) II | (1) — |
| (2) 2 | (2) 0.4 | (2) Coax Cable | (2) 7886 | (2) I | (2) — | (2) Trailer 2 Rear Vision Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) 2 | (2) 0.4 | (2) Coax Cable | (2) 7886 | (2) II | (2) — |

### X403 Engine Wiring Harness to Chassis Wiring Harness (L84 / L87)



4283035



2373686

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 34985-4142
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 13593409
- Service Connector: 19331031
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed( BK)

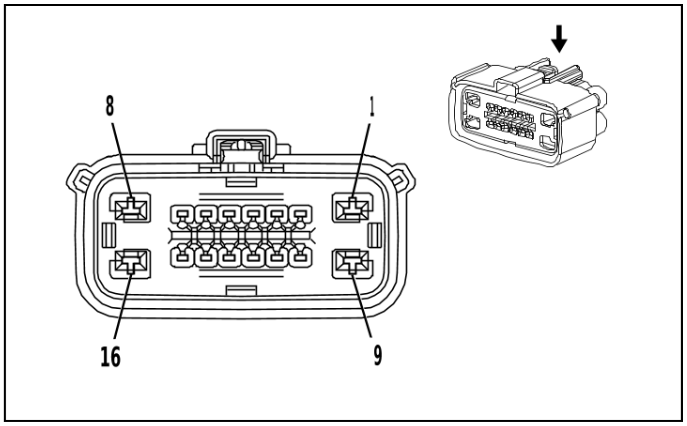
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13576377 | J-35616-35 (VT) | J-38125-12A |
| II | 85528055 | J-35616-2A (GY) | J-38125-217 |
| III | 19366658 | J-35616-5 (PU) | J-38125-12A |
| IV | 86800300 | J-35616-3 (GY) | J-38125-217 |

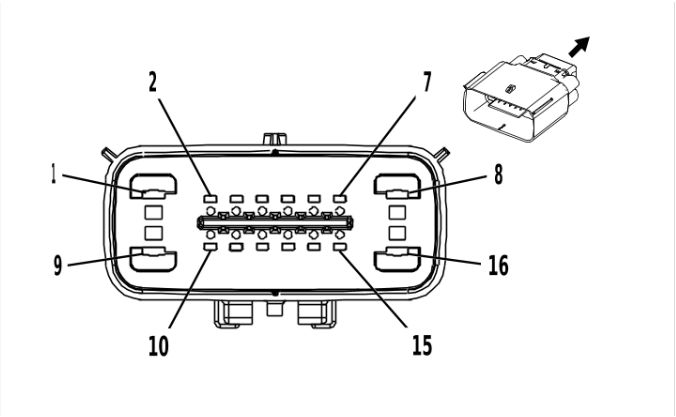
## X403 Engine Wiring Harness to Chassis Wiring Harness (L84 / L87)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) GN / GY | (3) 465 | (3) II | (3) — | (3) Fuel Pump Primary Relay Control | (3) 3 | (3) 0.5 | (3) GN / GY | (3) 465 | (3) IV | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4976 | (5) II | (5) — | (5) AUTOSAR CAN Bus [-] 3 Serial Data | (5) 5 | (5) 0.5 | (5) WH | (5) 4976 | (5) IV | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / BK | (6) 4977 | (6) II | (6) — | (6) AUTOSAR CAN Bus [+] 3 Serial Data | (6) 6 | (6) 0.5 | (6) BU / BK | (6) 4977 | (6) IV | (6) — |
| 7 | — | — | — | — | — | Not Occupied | 7 | — | — | — | — | — |
| (8) 8 | (8) 2.5 | (8) BU | (8) 47 | (8) I | (8) — | (8) Trailer Auxiliary Control | (8) 8 | (8) 2.5 | (8) BU | (8) 47 | (8) III | (8) — |
| 9 - 10 | — | — | — | — | — | Not Occupied | 9 - 10 | — | — | — | — | — |
| (11) 11 | (11) 0.75 | (11) BN / YE | (11) 820 | (11) II | (11) — | (11) Center High Mounted Stop Lamp Supply Voltage | (11) 11 | (11) 0.75 | (11) BN / YE | (11) 820 | (11) IV | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |
| (13) 13 | (13) 0.5 | (13) WH | (13) 4978 | (13) II | (13) — | (13) AUTOSAR CAN Bus [-] 2 Serial Data | (13) 13 | (13) 0.5 | (13) WH | (13) 4978 | (13) IV | (13) — |
| (14) 14 | (14) 0.5 | (14) BU / YE | (14) 4979 | (14) II | (14) — | (14) AUTOSAR CAN Bus [+] 2 Serial Data | (14) 14 | (14) 0.5 | (14) BU / YE | (14) 4979 | (14) IV | (14) — |
| 15 | — | — | — | — | — | Not Occupied | 15 | — | — | — | — | — |
| (16) 16 | (16) 0.5 | (16) VT / GN | (16) 4320 | (16) I | (16) — | (16) Powertrain Sensor Bus Enable | (16) 16 | (16) 0.5 | (16) VT / GN | (16) 4320 | (16) III | (16) — |

### X403 Engine Wiring Harness to Chassis Wiring Harness (LZ0)



3684497



2373686

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 34985-1606
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 34986-1601
- Service Connector: 19331031
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13576377 | J-35616-35 (VT) | J-38125-12A |
| II | 85528055 | J-35616-2A (GY) | J-38125-217 |
| III | 19366658 | J-35616-5 (PU) | J-38125-12A |
| IV | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X403 Engine Wiring Harness to Chassis Wiring Harness (LZ0)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) BK / WH | (1) 6151 | (1) I | (1) — | (1) Engine Control Module Ground | (1) 1 | (1) 1 | (1) BK / WH | (1) 6151 | (1) III | (1) — |
| (2) 2 | (2) 1 | (2) VT / GN | (2) 4320 | (2) II | (2) — | (2) Powertrain Sensor Bus Enable | (2) 2 | (2) 0.5 | (2) VT / GN | (2) 4320 | (2) IV | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / GY | (3) 465 | (3) II | (3) — | (3) Fuel Pump Primary Relay Control | (3) 3 | (3) 0.5 | (3) GN / GY | (3) 465 | (3) IV | (3) — |
| (4) 4 | (4) 0.5 | (4) BN / GN | (4) 4305 | (4) II | (4) — | (4) Exhaust Flow Control Valve 1 | (4) 4 | (4) 0.5 | (4) BN / GN | (4) 4305 | (4) IV | (4) — |
| (5) 5 | (5) 0.5 | (5) WH | (5) 4976 | (5) II | (5) — | (5) AUTOSAR CAN Bus [-] 3 Serial Data | (5) 5 | (5) 0.5 | (5) WH | (5) 4976 | (5) IV | (5) — |
| (6) 6 | (6) 0.5 | (6) BU / BK | (6) 4977 | (6) II | (6) — | (6) AUTOSAR CAN Bus [+] 3 Serial Data | (6) 6 | (6) 0.5 | (6) BU / BK | (6) 4977 | (6) IV | (6) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) BK / YE | (7) 548 | (7) II | (7) — | (7) Engine Control Sensors Low Reference 1 | (7) 7 | (7) 0.5 | (7) BK / YE | (7) 548 | (7) IV | (7) — |
| (8) 8 | (8) 2.5 | (8) BU | (8) 47 | (8) I | (8) — | (8) Trailer Auxiliary Control | (8) 8 | (8) 2.5 | (8) BU | (8) 47 | (8) III | (8) — |
| (9) 9 | (9) 0.5 | (9) VT / BK | (9) 2139 | (9) I | (9) — | (9) Run/ Crank Ignition 1 Voltage | (9) 9 | (9) 0.5 | (9) VT / BK | (9) 2139 | (9) III | (9) — |
| (10) 10 | (10) 0.5 | (10) BU / RD | (10) 460 | (10) II | (10) — | (10) Engine Control Sensors 5 Volt Reference 1 | (10) 10 | (10) 0.5 | (10) BU / RD | (10) 460 | (10) IV | (10) — |
| (11) 11 | (11) 0.75 | (11) BN / YE | (11) 820 | (11) II | (11) — | (11) Center High Mounted Stop Lamp Supply Voltage | (11) 11 | (11) 0.75 | (11) BN / YE | (11) 820 | (11) IV | (11) — |
| (12) 12 | (12) 0.75 | (12) YE / BN | (12) 1420 | (12) II | (12) — | (12) Exhaust Restrictor Motor Open Control | (12) 12 | (12) 0.75 | (12) YE / BN | (12) 1420 | (12) IV | (12) — |
| (13) 13 | (13) 0.5 | (13) WH | (13) 4978 | (13) II | (13) — | (13) AUTOSAR CAN Bus [-] 2 Serial Data | (13) 13 | (13) 0.5 | (13) WH | (13) 4978 | (13) IV | (13) — |
| (14) 14 | (14) 0.5 | (14) BU / YE | (14) 4979 | (14) II | (14) — | (14) AUTOSAR CAN Bus [+] 2 Serial Data | (14) 14 | (14) 0.5 | (14) BU / YE | (14) 4979 | (14) IV | (14) — |
| (15) 15 | (15) 0.75 | (15) BN | (15) 1421 | (15) II | (15) — | (15) Exhaust Restrictor Motor Closed Control | (15) 15 | (15) 0.75 | (15) BN | (15) 1421 | (15) IV | (15) — |
| (16) 16 | (16) 1 | (16) VT / GN | (16) 4320 | (16) I | (16) — | (16) Powertrain Sensor Bus Enable | (16) 16 | (16) 1 | (16) VT / GN | (16) 4320 | (16) III | (16) — |

## X404L Assist Step M to Chassis Wiring Harness (B3L)

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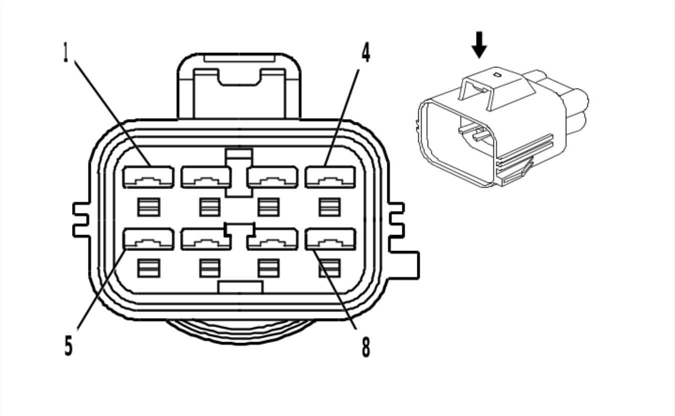

1856785

**Connector Part Information**

- Harness Type: Assist Step M
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 7282-5574-10
- Service Connector: 19367561
- Description: 8-Way M 2.8 YESC Series, Sealed( D-GY)

### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

### X404L Assist Step M to Chassis Wiring Harness (B3L)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) WH / BN | (1) 7471 | (1) I | (1) — | (1) Left Running Board Step Motor Control Extend | (1) 1 | (1) 2 | (1) WH / BN | (1) 7471 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 7468 | (2) I | (2) — | (2) Left Running Board Step Motor Hall Sensor 5V Reference | (2) 2 | (2) 0.5 | (2) VT / RD | (2) 7468 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE | (3) 7467 | (3) I | (3) — | (3) Left Running Board Step Motor Hall Sensor Signal | (3) 3 | (3) 0.5 | (3) YE | (3) 7467 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / BN | (4) 7466 | (4) I | (4) — | (4) Left Running Board Step Motor Hall Sensor Low Reference | (4) 4 | (4) 0.5 | (4) YE / BN | (4) 7466 | (4) II | (4) — |
| (5) 5 | (5) 2 | (5) GY | (5) 7472 | (5) I | (5) — | (5) Left Running Board Step Motor Control Retract | (5) 5 | (5) 2 | (5) GY | (5) 7472 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.5 | (7) BN | (7) 4748 | (7) I | (7) — | (7) Left Running Board Step Courtesy Lamp Control | (7) 7 | (7) 0.5 | (7) BN | (7) 4748 | (7) II | (7) — |
| (8) 8 | (8) 1 | (8) BK | (8) 1650 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 1 | (8) BK | (8) 1650 | (8) II | (8) — |

### X404R Assist Step M to Chassis Wiring Harness (B3L)

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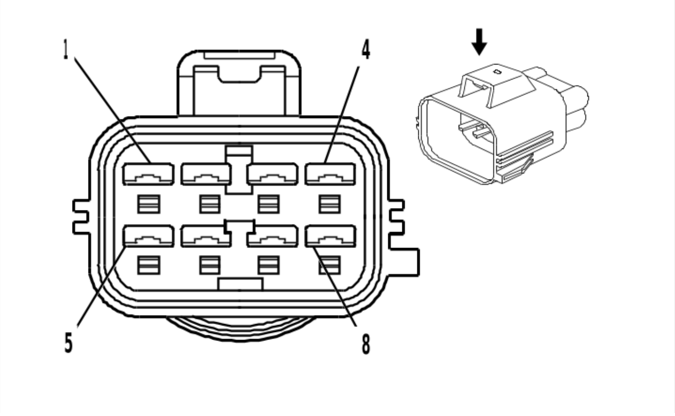


1856785

**Connector Part Information**
- Harness Type: Assist Step M
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 7282-5574-10
- Service Connector: 19367561
- Description: 8-Way M 2.8 YESC Series, Sealed( D-GY)

## Terminal Part Information

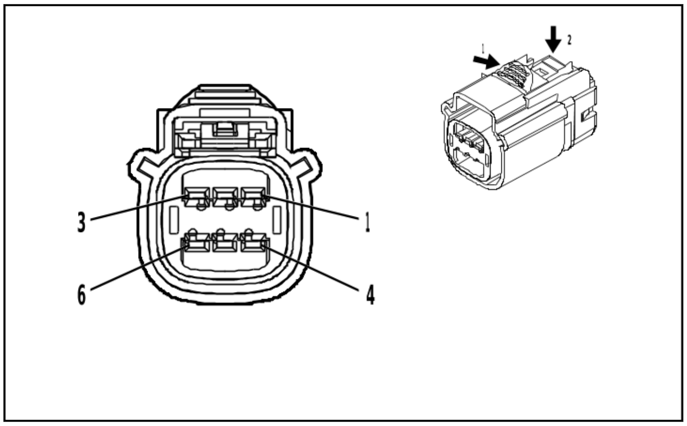
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

## X404R Assist Step M to Chassis Wiring Harness (B3L)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) BU | (1) 7470 | (1) I | (1) — | (1) Right Running Board Step Motor Control Extend | (1) 1 | (1) 2 | (1) BU | (1) 7470 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / RD | (2) 7464 | (2) I | (2) — | (2) Right Running Board Step Motor Hall Sensor 5V Reference | (2) 2 | (2) 0.5 | (2) GN / RD | (2) 7464 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) VT | (3) 7465 | (3) I | (3) — | (3) Right Running Board Step Motor Hall Sensor Signal | (3) 3 | (3) 0.5 | (3) VT | (3) 7465 | (3) II | (3) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.5 | (4) YE / BK | (4) 7463 | (4) I | (4) — | (4) Right Running Board Step Motor Hall Sensor Low Reference | (4) 4 | (4) 0.5 | (4) YE / BK | (4) 7463 | (4) II | (4) — |
| (5) 5 | (5) 2 | (5) GN | (5) 7469 | (5) I | (5) — | (5) Right Left Running Board Step Motor Control Retract | (5) 5 | (5) 2 | (5) GN | (5) 7469 | (5) II | (5) — |
| (7) 7 | (7) 0.5 | (7) GY / VT | (7) 4749 | (7) I | (7) — | (7) Right Running Board Step Courtesy Lamp Control | (7) 7 | (7) 0.5 | (7) GY / VT | (7) 4749 | (7) II | (7) — |
| (8) 8 | (8) 1 | (8) BK | (8) 1650 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 1 | (8) BK | (8) 1650 | (8) II | (8) — |

## X405D Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness



5004419

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**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13591160
- Service Connector: 84999473
- Description: 6-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Power Steering Wiring Harness Extension Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M ( BK)

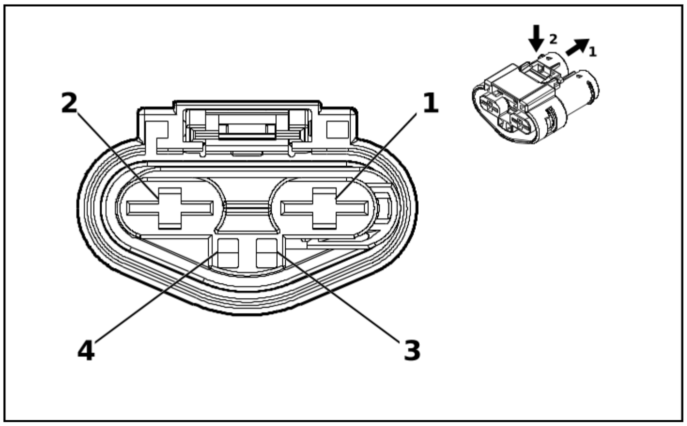
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X405D Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH | (1) 4978 | (1) I | (1) — | (1) AUTOSAR CAN Bus [-] 2 Serial Data | (1) 1 | (1) 0.5 | (1) WH | (1) 4978 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU / YE | (2) 4979 | (2) I | (2) — | (2) AUTOSAR CAN Bus [+] 2 Serial Data | (2) 2 | (2) 0.5 | (2) BU / YE | (2) 4979 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) I | (3) — | (3) AUTOSAR CAN Bus [+] 2 Serial Data | (3) 3 | (3) 0.5 | (3) BU / YE | (3) 4979 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) I | (4) — | (4) AUTOSAR CAN Bus [-] 2 Serial Data | (4) 4 | (4) 0.5 | (4) WH | (4) 4978 | (4) II | (4) — |
| 5 - 6 | — | — | — | — | — | Not Occupied | 5 - 6 | — | — | — | — | — |

### X405P Power Steering Wiring Harness to Power Steering Control Module Wiring Harness



5330342

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**Connector Part Information**
- Harness Type: Power Steering Wiring Harness
- OEM Connector: 13508902
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 2.8, 12 MAK Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Power Steering Control Module Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M ( BK)

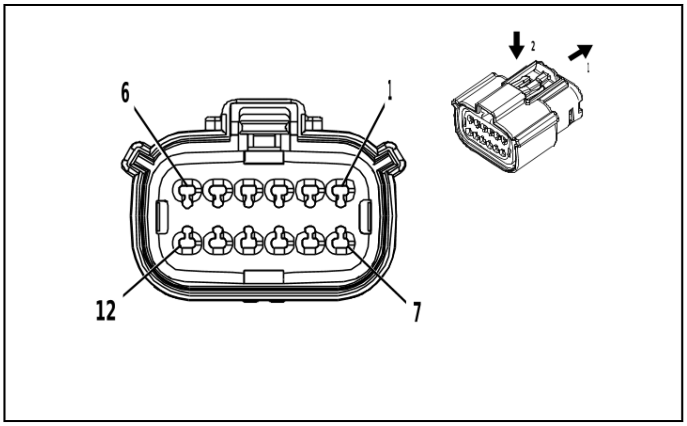
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

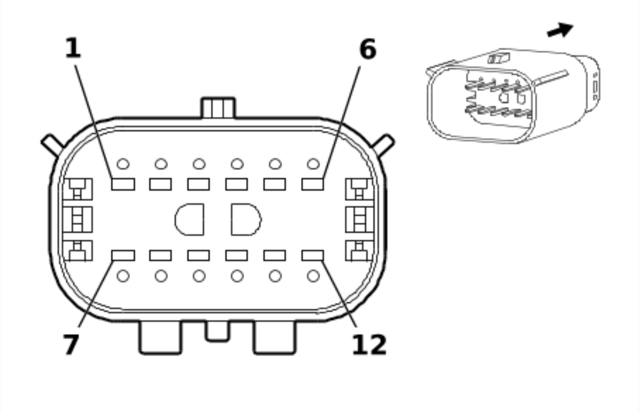
## X405P Power Steering Wiring Harness to Power Steering Control Module Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 25 | (1) BK | (1) 350 | (1) I | (1) | (1) Ground | (1) 1 | (1) 25 | (1) BK | (1) 350 | (1) II | (1) |
| (2) 2 | (2) 25 | (2) RD / VT | (2) 842 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 25 | (2) RD / VT | (2) 842 | (2) II | (2) — |
| 3 - 4 | — | — | — | — | — | Not Occupied | 3 - 4 | — | — | — | — | — |

### X410 Rear Body Structure Stop Lamp to Lamp to Body Wiring Harness



2871860



1825167

**Connector Part Information**

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-1206
- Service Connector: 19369242
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33482-6201
- Service Connector: 19369242
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

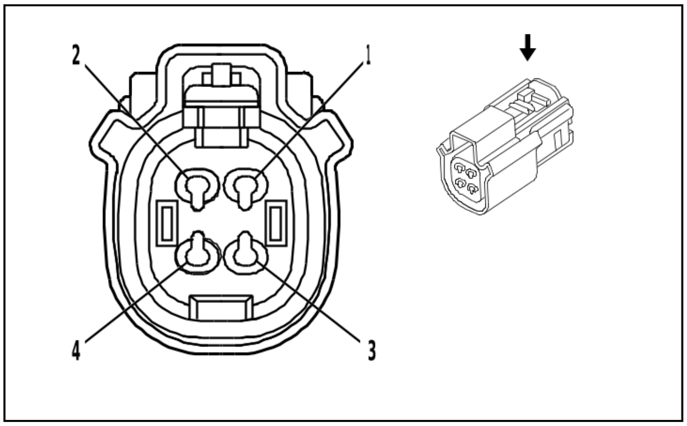
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |
| III | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X410 Rear Body Structure Stop Lamp to Lamp to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 2050 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 1.5 | (1) BK | (1) 2050 | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) RD | (2) 11240 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.75 | (2) RD / GY | (2) 11240 | (2) III | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / YE | (3) 7542 | (3) II | (3) — | (3) Left Rear Stop Lamp Control | (3) 3 | (3) 0.35 | (3) GY / YE | (3) 7542 | (3) III | (3) — |

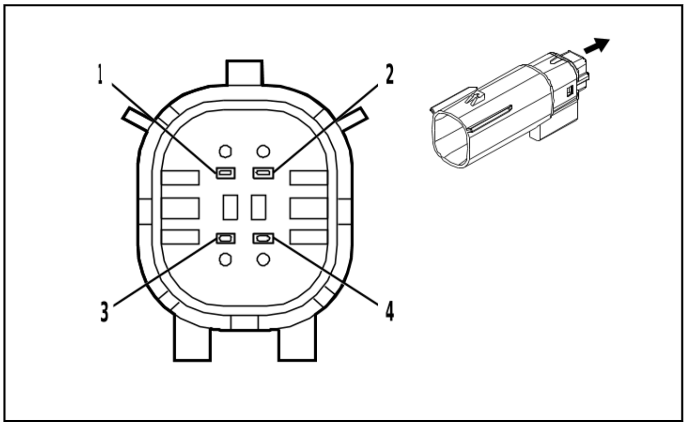
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (4) 4 | (4) 0.75 | (4) BN / BU | (4) 6993 | (4) I | (4) — | (4) Left Rear Park Lamp Control | (4) 4 | (4) 0.5 | (4) BN / BU | (4) 6993 | (4) III | (4) — |
| (5) 5 | (5) 0.75 | (5) BU / WH | (5) 1334 | (5) I | (5) — | (5) Left Rear Turn Signal Lamp Control 2 | (5) 5 | (5) 0.5 | (5) BU / WH | (5) 1334 | (5) III | (5) — |
| (6) 6 | (6) 0.75<br>(6) 0.75 | (6) WH / VT<br>(6) WH / BK | (6) 6567<br>(6) 6567 | (6) II<br>(6) I | (6) TAB<br>(6) TAU | (6) Rear Turn Signal Lamp Feedback Signal<br>(6) Rear Turn Signal Lamp Feedback Signal | (6) 6 | (6) 0.35 | (6) WH / VT | (6) 6567 | (6) III | (6) — |
| (7) 7 | (7) 0.75 | (7) GN / WH | (7) 24 | (7) I | (7) — | (7) Backup Lamp Control | (7) 7 | (7) 0.5 | (7) GN / WH | (7) 24 | (7) III | (7) — |
| (8) 8 | (8) — | (8) YE / GN | (8) 2024 | (8) II | (8) — | (8) Animation Lighting Control | (8) 8 | (8) 0.5 | (8) YE / GN | (8) 2024 | (8) III | (8) — |
| (9) 9 | (9) — | (9) GY / BN | (9) 10749 | (9) II | (9) — | (9) Sequential Turn Lamp Enable Signal | (9) 9 | (9) 0.5 | (9) GY / BN | (9) 10749 | (9) III | (9) — |
| 10 - 12 | — | — | — | — | — | Not Occupied | 10 - 12 | — | — | — | — | — |

### X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness (NP0 / NQH)



1960031

**Connector Part Information**
- Harness Type: Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness
- OEM Connector: 33472-4006
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way F 1.5 MX Series, Sealed( BK)



2368875

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33482-4001
- Service Connector: 84838880
- Description: 4-Way M 1.5 MX Series, Sealed( BK)

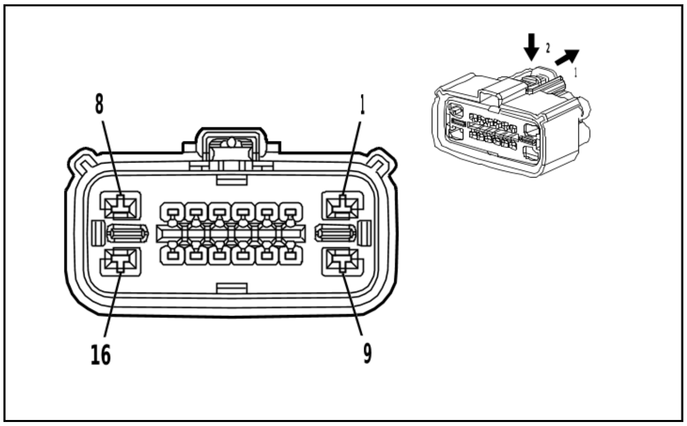
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

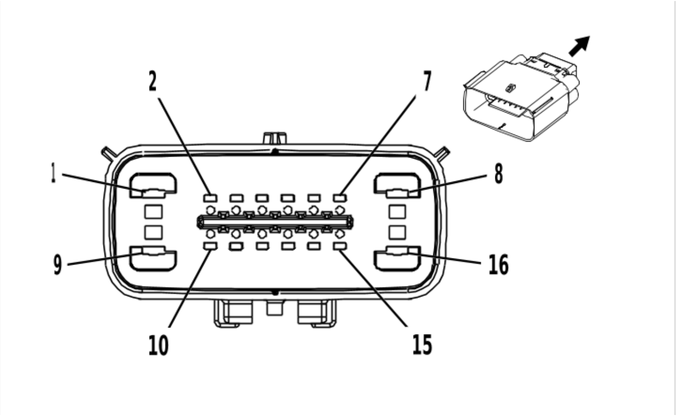
## X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness (NP0 / NQH)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) BK | (1) 450 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0.75 | (1) BK | (1) 6550 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) YE / WH | (2) 1695 | (2) I | (2) — | (2) 4WD Locked Range Indicator Control | (2) 2 | (2) 0.5 | (2) YE / WH | (2) 1695 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) GN | (3) 8016 | (3) I | (3) — | (3) Secondary Axle Motor Control | (3) 3 | (3) 0.75 | (3) GN | (3) 8016 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GY / BK | (4) 1570 | (4) I | (4) — | (4) Front Axle Actuator Control | (4) 4 | (4) 0.5 | (4) GY / BK | (4) 1570 | (4) II | (4) — |

### X415R Chassis Wiring Harness to Differential Carrier Lock Wiring Harness



4283035



2373686

**Connector Part Information**
- Harness Type: Chassis Wiring Harness
- OEM Connector: 34985-4156
- Service Connector: 19352906
- Description: 16-Way F 1.5, 2.8 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Differential Carrier Lock Wiring Harness
- OEM Connector: 34986-1601
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.5, 2.8 MX Series, Sealed( BK)

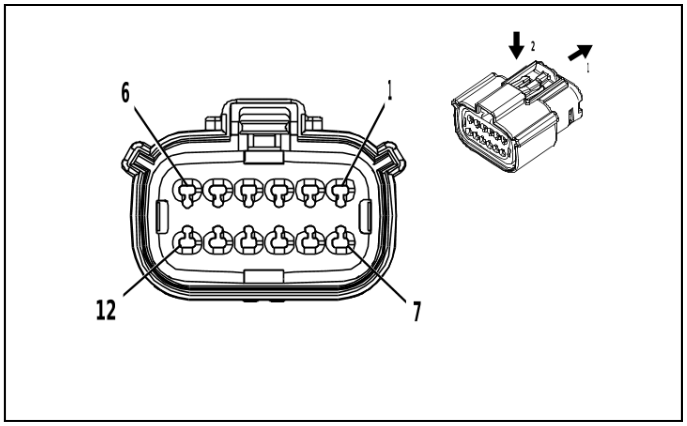
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13576377 | J-35616-35 (VT) | J-38125-12A |
| II | 85528055 | J-35616-2A (GY) | J-38125-217 |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

### X415R Chassis Wiring Harness to Differential Carrier Lock Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) GY / BN | (1) 7968 | (1) I | (1) — | (1) Axle Differential Lock Control High | (1) 1 | (1) 2.5 | (1) GY / BN | (1) 7968 | (1) IV | (1) — |
| (2) 2 | (2) 0.75 | (2) WH | (2) 7971 | (2) II | (2) — | (2) Axle Differential Lock Motor Brake Control High | (2) 2 | (2) 0.5 | (2) WH | (2) 7971 | (2) III | (2) — |
| (3) 3 | (3) 0.5 | (3) GN / BN | (3) 7975 | (3) II | (3) — | (3) Axle Differential Lock Motor Position Sensor Signal 1 | (3) 3 | (3) 0.5 | (3) GN / BN | (3) 7975 | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / VT | (4) 7974 | (4) II | (4) — | (4) Axle Differential Lock Motor Position Sensor Low Reference | (4) 4 | (4) 0.5 | (4) BK / VT | (4) 7974 | (4) III | (4) — |
| (5) 5 | (5) 0.75 | (5) VT / BK | (5) 7972 | (5) II | (5) — | (5) Axle Differential Lock Motor Brake Control Low | (5) 5 | (5) 0.5 | (5) VT / BK | (5) 7972 | (5) III | (5) — |
| (6) 6 | (6) 0.75 | (6) WH / RD | (6) 7973 | (6) II | (6) — | (6) Axle Differential Lock Motor Position Sensor High Reference | (6) 6 | (6) 0.5 | (6) WH / RD | (6) 7973 | (6) III | (6) — |
| (7) 7 | (7) 0.5 | (7) BK / YE | (7) 7977 | (7) II | (7) — | (7) Axle Differential Lock Motor Temperature Sensor Low Reference | (7) 7 | (7) 0.5 | (7) BK / YE | (7) 7977 | (7) III | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 2.5 | (9) YE / WH | (9) 7969 | (9) I | (9) — | (9) Axle Differential Lock Control Low | (9) 9 | (9) 2.5 | (9) YE / WH | (9) 7969 | (9) IV | (9) — |
| (10) 10 | (10) 0.5 | (10) BK | (10) 7970 | (10) II | (10) — | (10) Axle Differential Lock Control Shield | (10) 10 | (10) 0.5 | (10) BK | (10) 7970 | (10) III | (10) — |
| (11) 11 | (11) 0.5 | (11) GY | (11) 7976 | (11) II | (11) — | (11) Axle Differential Lock Motor Position Sensor Signal 2 | (11) 11 | (11) 0.5 | (11) GY | (11) 7976 | (11) III | (11) — |
| (12) 12 | (12) 0.5 | (12) BU / WH | (12) 7978 | (12) II | (12) — | (12) Axle Differential Lock Motor Temperature Sensor Signal | (12) 12 | (12) 0.5 | (12) BU / WH | (12) 7978 | (12) III | (12) — |
| 13 - 16 | — | — | — | — | — | Not Occupied | 13 - 16 | — | — | — | — | — |

### X420 Rear Body Structure Stop Lamp to Lamp to Body Wiring Harness



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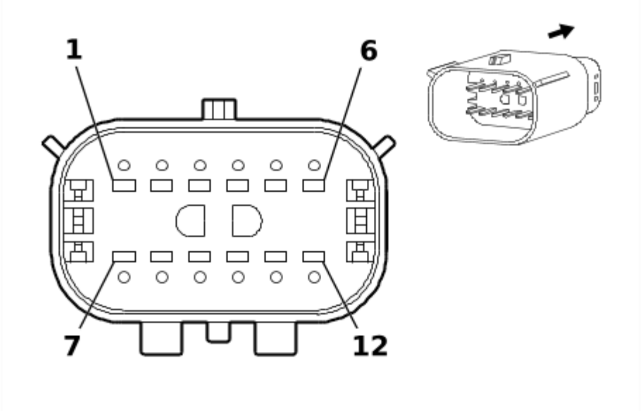


1825167

**Connector Part Information**

- Harness Type: Rear Body Structure Stop Lamp
- OEM Connector: 33472-1206
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 33482-6201
- Service Connector: 19369242
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

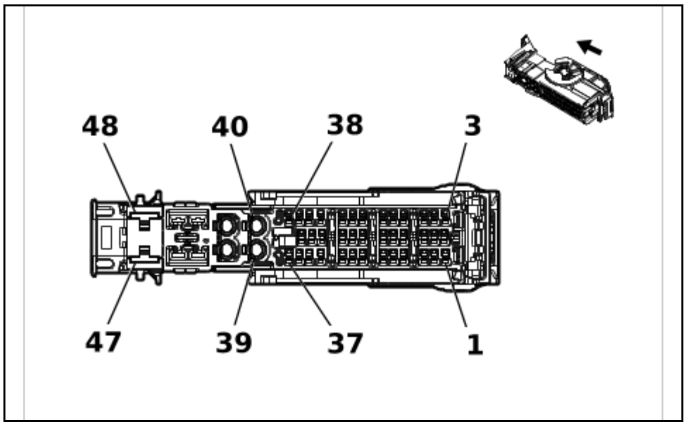
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |
| III | 86800300 | J-35616-3 (GY) | J-38125-217 |

## X420 Rear Body Structure Stop Lamp to Lamp to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 1450 | (1) I | (1) — | (1) Ground | (1) 1 | (1) 0.75 | (1) BK | (1) 1450 | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) RD | (2) 11340 | (2) I | (2) — | (2) Battery Positive Voltage | (2) 2 | (2) 0.75 | (2) RD / BU | (2) 11340 | (2) III | (2) — |
| (3) 3 | (3) 0.75 | (3) GY / YE | (3) 7541 | (3) I | (3) — | (3) Right Rear Stop Lamp Control | (3) 3 | (3) 0.35 | (3) WH / YE | (3) 7541 | (3) III | (3) — |
| (4) 4 | (4) 0.75 | (4) BN / BU | (4) 6995 | (4) I | (4) — | (4) Right Rear Park Lamp Control | (4) 4 | (4) 0.5 | (4) BN / GY | (4) 6995 | (4) III | (4) — |
| (5) 5 | (5) 0.75 | (5) BU / WH | (5) 1335 | (5) I | (5) — | (5) Right Rear Turn Signal Lamp Control 2 | (5) 5 | (5) 0.5 | (5) BU / VT | (5) 1335 | (5) III | (5) — |
| (6) 6 | (6) 0.75<br>(6) 0.75 | (6) WH / VT<br>(6) WH / BK | (6) 7544<br>(6) 7544 | (6) I<br>(6) II | (6) TAB<br>(6) TAU | (6) Right Rear Turn Signal Lamp Feedback Signal<br>(6) Right Rear Turn Signal Lamp Feedback Signal | (6) 6 | (6) 0.35 | (6) WH / BK | (6) 7544 | (6) III | (6) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (7) 7 | (7) 0.75 | (7) GN / WH | (7) 24 | (7) I | (7) — | (7) Backup Lamp Control | (7) 7 | (7) 0.5 | (7) GN / WH | (7) 24 | (7) III | (7) — |
| (8) 8 | (8) 0.75 | (8) YE / GN | (8) 2024 | (8) I | (8) — | (8) Animation Lighting Control | (8) 8 | (8) 0.5 | (8) YE / GN | (8) 2024 | (8) III | (8) — |
| (9) 9 | (9) 0.75 | (9) GY / BN | (9) 10749 | (9) I | (9) — | (9) Sequential Turn Lamp Enable Signal | (9) 9 | (9) 0.5 | (9) GY / BN | (9) 10749 | (9) III | (9) — |
| 10 - 12 | — | — | — | — | — | Not Occupied | 10 - 12 | — | — | — | — | — |

### X500 Front Side Door Door Wiring Harness - left to Body Wiring Harness



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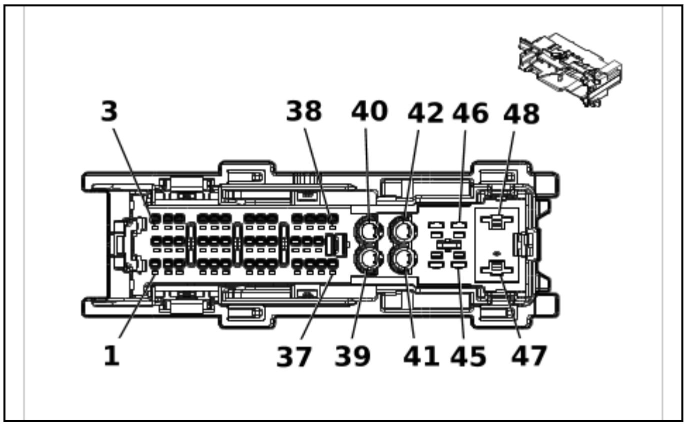


6187159

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 6099-0288
- Service Connector: Service by Harness - See Part Catalog
- Description: 48-Way F 1.2 SWS, 2.8, 6.3 YESC, Coaxial Series( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0560
- Service Connector: 13561848
- Description: 48-Way M 1.2 SWS, 2.8, 6.3 YESC, Coaxial Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Service by Cable | No Tool Required | No Tool Required |
| V | 84616651 | J-35616-13 (BU) | J-38125-215A |
| VI | 87838107 | J-35616-43 (RD) | J-38125-11A |
| VII | Service by Cable | No Tool Required | No Tool Required |

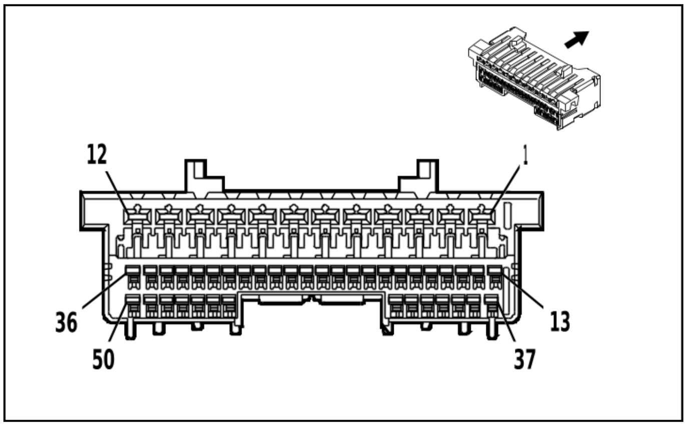
## X500 Front Side Door Door Wiring Harness - left to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BU / VT | (1) 8873 | (1) II | (1) — | (1) Police Left Mirror Light Steady Burn Control | (1) 1 | (1) 0.75 | (1) BU / VT | (1) 8873 | (1) V | (1) — |
| (2) 2 | (2) 0.75 | (2) GY | (2) 2681 | (2) II | (2) — | (2) Left Front Door Lock Actuator Lock Control | (2) 2 | (2) 0.75 | (2) GY | (2) 2681 | (2) V | (2) — |
| 3 - 4 | — | — | — | — | — | Not Occupied | 3 - 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1151 | (5) II | (5) — | (5) Signal Ground | (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1151 | (5) V | (5) — |
| (6) 6 | (6) 0.35 | (6) GN / BK | (6) 2738 | (6) I | (6) — | (6) Near Field Communication Module LIN Bus 1 | (6) 6 | (6) 0.35 | (6) GN / BK | (6) 2738 | (6) V | (6) — |
| (7) 7 | (7) 0.75 | (7) BK / VT | (7) 8871 | (7) II | (7) — | (7) Police Left Mirror Light Low Reference | (7) 7 | (7) 0.75 | (7) BK / VT | (7) 8871 | (7) V | (7) — |
| (8) 8 | (8) 0.75 | (8) VT | (8) 8870 | (8) II | (8) — | (8) Police Left Mirror Light Control | (8) 8 | (8) 0.75 | (8) VT | (8) 8870 | (8) V | (8) — |
| 9 | — | — | — | — | — | Not Occupied | 9 | — | — | — | — | — |
| (10) 10 | (10) 0.75 | (10) BN / BU | (10) 118 | (10) II | (10) — | (10) Left Front Speaker [-] Control 1<br>(10) Left Front Speaker [-] Control 1 | (10) 10 | (10) 0.5<br>(10) 0.75 | (10) BN / BU<br>(10) BN / BU | (10) 118<br>(10) 118 | (10) V<br>(10) V | (10) UQF<br>(10) UQS |
| (11) 11 | (11) 0.75 | (11) YE / VT | (11) 8874 | (11) II | (11) — | (11) Police Left Mirror Light Flash Enable Signal | (11) 11 | (11) 0.75 | (11) YE / VT | (11) 8874 | (11) V | (11) — |
| (12) 12 | (12) 0.35 | (12) VT / GY | (12) 126 | (12) I | (12) — | (12) Left Front Door Open Switch Signal | (12) 12 | (12) 0.35 | (12) VT / GY | (12) 126 | (12) V | (12) — |
| (13) 13 | (13) 0.75 | (13) BU | (13) 201 | (13) II | (13) — | (13) Left Front Speaker 1 [+] Control<br>(13) Left Front Speaker 1 [+] Control | (13) 13 | (13) 0.5<br>(13) 0.75 | (13) BU<br>(13) BU | (13) 201<br>(13) 201 | (13) V<br>(13) V | (13) UQF<br>(13) UQS |
| (14) 14 | (14) 0.5 | (14) BU | (14) 2675 | (14) II | (14) — | (14) Left Front Exterior Door Handle Switch Unlock Signal | (14) 14 | (14) 0.35 | (14) BU | (14) 2675 | (14) V | (14) — |
| 15 | — | — | — | — | — | Not Occupied | 15 | — | — | — | — | — |
| (16) 16 | (16) 0.35 | (16) YE / WH | (16) 1690 | (16) I | (16) — | (16) Mirror Dimming Signal | (16) 16 | (16) 0.35 | (16) YE / WH | (16) 1690 | (16) V | (16) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (17) 17 | (17) 0.35 | (17) BK / YE | (17) 1691 | (17) I | (17) — | (17) Automatic Day/Night Mirror Low Reference | (17) 17 | (17) 0.35 | (17) BK / YE | (17) 1691 | (17) V | (17) — |
| 18 | — | — | — | — | — | Not Occupied | 18 | — | — | — | — | — |
| (19) 19 | (19) 0.75 | (19) WH | (19) 2679 | (19) II | (19) — | (19) Lock Actuators Unlock Control 1 | (19) 19 | (19) 0.75 | (19) WH | (19) 2679 | (19) V | (19) — |
| 20 - 21 | — | — | — | — | — | Not Occupied | 20 - 21 | — | — | — | — | — |
| (22) 22 | (22) 0.75 | (22) WH / VT | (22) 8872 | (22) II | (22) — | (22) Police Left Mirror Light Synchronization Signal | (22) 22 | (22) 0.75 | (22) WH / VT | (22) 8872 | (22) V | (22) — |
| (23) 23 | (23) 0.5 | (23) RD / VT | (23) 1940 | (23) II | (23) — | (23) Battery Positive Voltage | (23) 23 | (23) 0.5 | (23) RD / VT | (23) 1940 | (23) V | (23) — |
| (24) 24 | (24) 0.35 | (24) GN / YE | (24) 6134 | (24) I | (24) — | (24) Body Control Module LIN Bus 3 | (24) 24 | (24) 0.5 | (24) GN / YE | (24) 6134 | (24) V | (24) — |
| (25) 25 | (25) 0.5 | (25) WH | (25) 615 | (25) II | (25) — | (25) Seat Memory Switch Signal 1 | (25) 25 | (25) 0.5 | (25) WH | (25) 615 | (25) V | (25) — |
| (26) 26 | (26) 0.5 | (26) BU / GN | (26) 614 | (26) II | (26) — | (26) Seat Memory Switch Set Signal | (26) 26 | (26) 0.5 | (26) BU / GN | (26) 614 | (26) V | (26) — |
| (27) 27 | (27) 0.35 | (27) WH / GY | (27) 2114 | (27) I | (27) — | (27) Left Turn Signal Lamp Control 2 | (27) 27 | (27) 0.35 | (27) WH / GY | (27) 2114 | (27) V | (27) — |
| 28 - 30 | — | — | — | — | — | Not Occupied | 28 - 30 | — | — | — | — | — |
| (31) 31 | (31) 0.35 | (31) WH / GN | (31) 5966 | (31) I | (31) — | (31) Approach Lamp Control | (31) 31 | (31) 0.5 | (31) WH / GN | (31) 5966 | (31) V | (31) — |
| 32 | — | — | — | — | — | Not Occupied | 32 | — | — | — | — | — |
| (33) 33 | (33) 0.35 | (33) GY | (33) 728 | (33) I | (33) — | (33) Security Indicator Control | (33) 33 | (33) 0.5 | (33) GY | (33) 728 | (33) V | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.5 | (35) BK / OG | (35) 6628 | (35) II | (35) — | (35) Left Front Side Impact Sensor Low Reference | (35) 35 | (35) 0.5 | (35) BK / OG | (35) 6628 | (35) V | (35) — |
| (36) 36 | (36) 0.5 | (36) OG / GN | (36) 2132 | (36) II | (36) — | (36) Left Front Side Impact Sensor Signal | (36) 36 | (36) 0.5 | (36) OG / GN | (36) 2132 | (36) V | (36) — |
| 37 - 38 | — | — | — | — | — | Not Occupied | 37 - 38 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (39) 39 | (39) 0 | (39) Coax Cable | (39) 4725 | (39) IV | (39) — | (39) Left Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (39) 39 | (39) 0 | (39) Coax Cable | (39) 4725 | (39) VII | (39) — |
| 40 - 46 | — | — | — | — | — | Not Occupied | 40 - 46 | — | — | — | — | — |
| (47) 47 | (47) 2.5 | (47) BK | (47) 1150 | (47) III | (47) — | (47) Ground | (47) 47 | (47) 2.5 | (47) BK | (47) 1150 | (47) VI | (47) — |
| (48) 48 | (48) 2.5 | (48) RD / GY | (48) 3540 | (48) III | (48) — | (48) Battery Positive Voltage | (48) 48 | (48) 2.5 | (48) RD / GY | (48) 3540 | (48) VI | (48) — |

### X505 Front Side Door Door Wiring Harness - left to Front Side Door Door Lock Door Wiring Harness - Left



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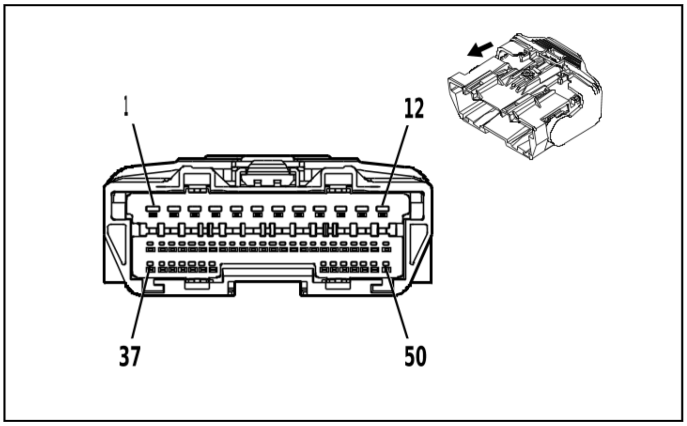


5022037

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - left
- OEM Connector: 35283943
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way F 1.2, 2.8 OCS Series( BK)

**Connector Part Information**

- Harness Type: Front Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 33390111
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way M 1.2, 2.8 OCS Series( BK)

## Terminal Part Information

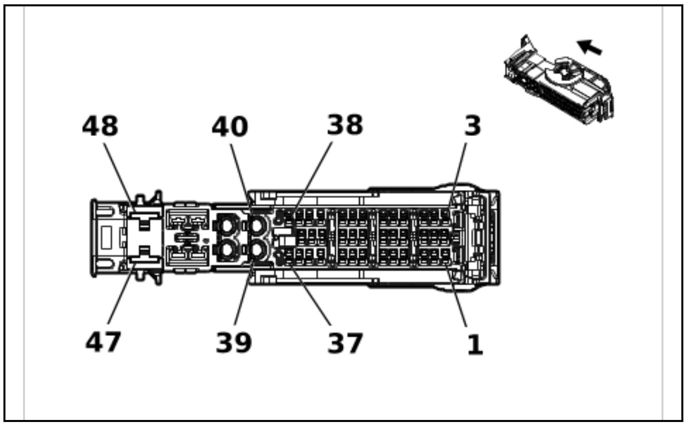
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | Not required | J-35616-13 (BU) | No Tool Required |
| V | Not required | J-35616-17 (L-GN) | No Tool Required |
| VI | Not required | J-35616-5 (PU) | No Tool Required |

## X505 Front Side Door Door Wiring Harness - left to Front Side Door Door Lock Door Wiring Harness - Left

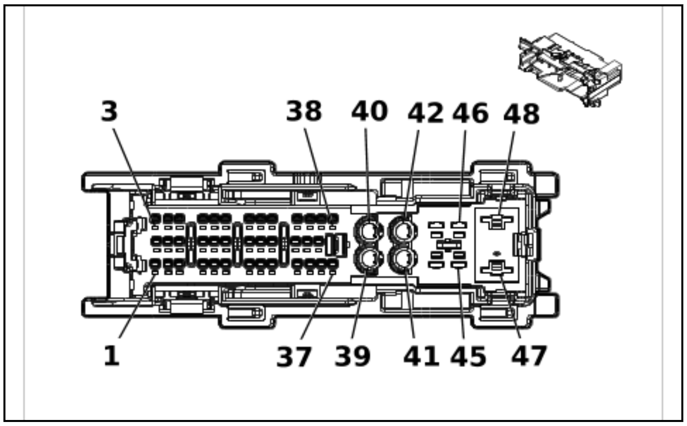
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.35 | (3) VT / BU | (3) 2788 | (3) III | (3) — | (3) Left Front Mirror Motor Up [+] Down [-] Control | (3) 3 | (3) 0.35 | (3) VT / BU | (3) 2788 | (3) VI | (3) — |
| (4) 4 | (4) 0.35 | (4) VT / RD | (4) 2791 | (4) III | (4) — | (4) Left Front Mirror Position Sensor High Reference | (4) 4 | (4) 0.35 | (4) VT / RD | (4) 2791 | (4) VI | (4) — |
| 5 | — | — | — | — | — | Not Occupied | 5 | — | — | — | — | — |
| (6) 6 | (6) 0.35 | (6) GY | (6) 728 | (6) III | (6) — | (6) Security Indicator Control | (6) 6 | (6) 0.35 | (6) GY | (6) 728 | (6) VI | (6) — |
| 7 - 8 | — | — | — | — | — | Not Occupied | 7 - 8 | — | — | — | — | — |
| (9) 9 | (9) 0.35 | (9) WH / YE | (9) 2792 | (9) III | (9) — | (9) Left Front Mirror Position Sensor Left [-] Right [+] Signal | (9) 9 | (9) 0.35 | (9) WH / YE | (9) 2792 | (9) VI | (9) — |
| (10) 10 | (10) 0.35 | (10) WH / BN | (10) 2764 | (10) III | (10) — | (10) Window Switch Left Front Down Signal | (10) 10 | (10) 0.35 | (10) WH / BN | (10) 2764 | (10) VI | (10) — |
| 11 - 14 | — | — | — | — | — | Not Occupied | 11 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.5 | (15) WH | (15) 615 | (15) II | (15) — | (15) Seat Memory Switch Signal 1 | (15) 15 | (15) 0.35 | (15) WH | (15) 615 | (15) IV | (15) — |
| (16) 16 | (16) 0.75 | (16) BK | (16) 1150 | (16) II | (16) — | (16) Ground | (16) 16 | (16) 0.35 | (16) BK | (16) 1150 | (16) IV | (16) — |
| (17) 17 | (17) 0.35 | (17) GN / YE | (17) 6134 | (17) I | (17) — | (17) Body Control Module LIN Bus 3 | (17) 17 | (17) 0.35 | (17) GN / YE | (17) 6134 | (17) IV | (17) — |
| (18) 18 | (18) 0.35 | (18) GN | (18) 2766 | (18) I | (18) — | (18) Power Window Switch Left Front Express Signal | (18) 18 | (18) 0.35 | (18) GN | (18) 2766 | (18) IV | (18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 0.5 | (20) RD / VT | (20) 1940 | (20) II | (20) — | (20) Battery Positive Voltage | (20) 20 | (20) 0.5 | (20) RD / VT | (20) 1940 | (20) V | (20) — |
| (21) 21 | (21) 0.35 | (21) YE / BN | (21) 2789 | (21) I | (21) — | (21) Left Front Mirror Motor Common Control | (21) 21 | (21) 0.35 | (21) YE / BN | (21) 2789 | (21) IV | (21) — |
| 22 | — | — | — | — | — | Not Occupied | 22 | — | — | — | — | — |
| (23) 23 | (23) 0.35 | (23) WH / VT | (23) 4258 | (23) I | (23) — | (23) Left Front Door Lock Status Signal | (23) 23 | (23) 0.35 | (23) WH / VT | (23) 4258 | (23) IV | (23) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (24) 24 | (24) 0.35 | (24) BK / BN | (24) 673 | (24) I | (24) — | (24) Left Outside Rearview Mirror Position Sensor Low Reference | (24) 24 | (24) 0.35 | (24) BK / BN | (24) 673 | (24) IV | (24) — |
| (25) 25 | (25) 0.35 | (25) GY / GN | (25) 2763 | (25) I | (25) — | (25) Window Switch Left Front Up Signal | (25) 25 | (25) 0.35 | (25) GY / GN | (25) 2763 | (25) IV | (25) — |
| 26 | — | — | — | — | — | Not Occupied | 26 | — | — | — | — | — |
| (27) 27 | (27) 0.35 | (27) BN / BK | (27) 2790 | (27) I | (27) — | (27) Left Front Mirror Motor Right [+] Left [-] Control | (27) 27 | (27) 0.35 | (27) BN / BK | (27) 2790 | (27) IV | (27) — |
| 28 - 30 | — | — | — | — | — | Not Occupied | 28 - 30 | — | — | — | — | — |
| (31) 31 | (31) 0.35 | (31) GY / YE | (31) 1760 | (31) I | (31) — | (31) Left Side Object Detection LED Control | (31) 31 | (31) 0.35 | (31) GY / YE | (31) 1760 | (31) IV | (31) — |
| 32 - 35 | — | — | — | — | — | Not Occupied | 32 - 35 | — | — | — | — | — |
| (36) 36 | (36) 0.5 | (36) BK / WH | (36) 1151 | (36) II | (36) — | (36) Signal Ground | (36) 36 | (36) 0.35 | (36) BK / WH | (36) 1151 | (36) IV | (36) — |
| 37 | — | — | — | — | — | Not Occupied | 37 | — | — | — | — | — |
| (38) 38 | (38) 0.35 | (38) WH | (38) 606 | (38) I | (38) — | (38) Left Outside Rearview Mirror Heater Control | (38) 38 | (38) 0.35 | (38) WH | (38) 606 | (38) IV | (38) — |
| (39) 39 | (39) 0.35 | (39) GY / WH | (39) 2785 | (39) I | (39) — | (39) Left Front Mirror Motor Fold Out Control | (39) 39 | (39) 0.35 | (39) GY / WH | (39) 2785 | (39) IV | (39) — |
| 40 - 42 | — | — | — | — | — | Not Occupied | 40 - 42 | — | — | — | — | — |
| (43) 43 | (43) 0.35 | (43) WH / GN | (43) 2786 | (43) I | (43) — | (43) Left Front Mirror Motor Fold In Control | (43) 43 | (43) 0.35 | (43) WH / GN | (43) 2786 | (43) IV | (43) — |
| 44 | — | — | — | — | — | Not Occupied | 44 | — | — | — | — | — |
| (45) 45 | (45) 0.5 | (45) BU / GN | (45) 614 | (45) II | (45) — | (45) Seat Memory Switch Set Signal | (45) 45 | (45) 0.35 | (45) BU / GN | (45) 614 | (45) IV | (45) — |
| (46) 46 | (46) 0.35 | (46) GY / BN | (46) 2787 | (46) I | (46) — | (46) Left Front Mirror Position Sensor Up [+] Down [-] Signal | (46) 46 | (46) 0.35 | (46) GY / BN | (46) 2787 | (46) IV | (46) — |
| 47 - 50 | — | — | — | — | — | Not Occupied | 47 - 50 | — | — | — | — | — |

### X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness



6192563



6187159

**Connector Part Information**

- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 6099-0288
- Service Connector: Service by Harness - See Part Catalog
- Description: 48-Way F 1.2 SWS, 2.8, 6.3 YESC, Coaxial Series( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0560
- Service Connector: 13561848
- Description: 48-Way M 1.2 SWS, 2.8, 6.3 YESC, Coaxial Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-42 (RD) | No Tool Required |
| IV | Service by Cable | No Tool Required | No Tool Required |
| V | 84616651 | J-35616-13 (BU) | J-38125-215A |
| VI | 87838107 | J-35616-43 (RD) | J-38125-11A |
| VII | Service by Cable | No Tool Required | No Tool Required |

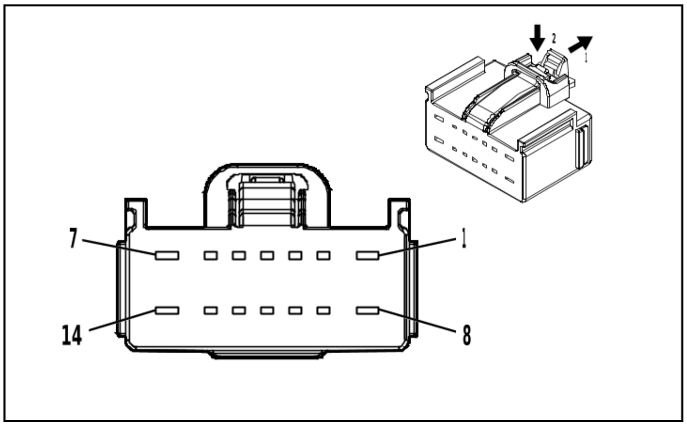
## X600 Front Side Door Door Wiring Harness - Right to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 3 | — | — | — | — | — | Not Occupied | 1 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0.35 | (4) GN / GY | (4) 2115 | (4) I | (4) — | (4) Right Turn Signal Lamp Control 2 | (4) 4 | (4) 0.35 | (4) GN / GY | (4) 2115 | (4) V | (4) — |
| (5) 5 | (5) 0.5 | (5) BK / WH | (5) 1251 | (5) II | (5) — | (5) Signal Ground | (5) 5 | (5) 0.75 | (5) BK / WH | (5) 1251 | (5) V | (5) — |
| 6 - 7 | — | — | — | — | — | Not Occupied | 6 - 7 | — | — | — | — | — |
| (8) 8 | (8) 0.75 | (8) BK / GY | (8) 8881 | (8) II | (8) — | (8) Police Right Mirror Light Low Reference | (8) 8 | (8) 0.75 | (8) BK / GY | (8) 8881 | (8) V | (8) — |
| 9 | — | — | — | — | — | Not Occupied | 9 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.75 | (10) YE / BK | (10) 117 | (10) II | (10) — | (10) Right Front Speaker [-] Control 1<br>(10) Right Front Speaker [-] Control 1 | (10) 10 | (10) 0.5<br>(10) 0.75 | (10) YE / BK<br>(10) YE / BK | (10) 117<br>(10) 117 | (10) V<br>(10) V | (10) UQS<br>(10) UQF |
| (11) 11 | (11) 0.75 | (11) GY | (11) 8880 | (11) II | (11) — | (11) Police Right Mirror Light Control | (11) 11 | (11) 0.75 | (11) GY | (11) 8880 | (11) V | (11) — |
| 12 | — | — | — | — | — | Not Occupied | 12 | — | — | — | — | — |
| (13) 13 | (13) 0.75 | (13) YE | (13) 200 | (13) II | (13) — | (13) Right Front Speaker 1 [+] Control<br>(13) Right Front Speaker 1 [+] Control | (13) 13 | (13) 0.5<br>(13) 0.75 | (13) YE<br>(13) YE | (13) 200<br>(13) 200 | (13) V<br>(13) V | (13) UQS<br>(13) UQF |
| (14) 14 | (14) 0.75 | (14) WH / GY | (14) 8882 | (14) II | (14) — | (14) Police Right Mirror Light Synchronization Signal | (14) 14 | (14) 0.75 | (14) WH / GY | (14) 8882 | (14) V | (14) — |
| 15 - 17 | — | — | — | — | — | Not Occupied | 15 - 17 | — | — | — | — | — |
| (18) 18 | (18) 0.75 | (18) YE / GY | (18) 8884 | (18) II | (18) — | (18) Police Right Mirror Light Flash Enable Signal | (18) 18 | (18) 0.75 | (18) YE / GY | (18) 8884 | (18) V | (18) — |
| (19) 19 | (19) 0.75 | (19) GY / BK | (19) 2680 | (19) II | (19) — | (19) Lock Actuators Unlock Control 2 | (19) 19 | (19) 0.75 | (19) GY / BK | (19) 2680 | (19) V | (19) — |
| (20) 20 | (20) 0.5 | (20) BN / OG | (20) 2134 | (20) II | (20) — | (20) Right Front Side Impact Sensor Signal | (20) 20 | (20) 0.5 | (20) BN / OG | (20) 2134 | (20) V | (20) — |
| (21) 21 | (21) 0.5 | (21) BK / OG | (21) 6629 | (21) II | (21) — | (21) Right Front Side Impact Sensor Low Reference | (21) 21 | (21) 0.5 | (21) BK / OG | (21) 6629 | (21) V | (21) — |
| (22) 22 | (22) 0.75 | (22) YE / GN | (22) 2682 | (22) II | (22) — | (22) Right Front Door Lock Actuator Lock Control | (22) 22 | (22) 0.75 | (22) YE / GN | (22) 2682 | (22) V | (22) — |
| (23) 23 | (23) 0.5 | (23) RD / BU | (23) 5240 | (23) II | (23) — | (23) Battery Positive Voltage | (23) 23 | (23) 0.5 | (23) RD / BU | (23) 5240 | (23) V | (23) — |
| (24) 24 | (24) 0.35 | (24) GN / YE | (24) 6134 | (24) I | (24) — | (24) Body Control Module LIN Bus 3 | (24) 24 | (24) 0.5 | (24) GN / YE | (24) 6134 | (24) V | (24) — |
| (25) 25 | (25) 0.75 | (25) BU / GY | (25) 8883 | (25) II | (25) — | (25) Police Right Mirror Light Steady Burn Control | (25) 25 | (25) 0.75 | (25) BU / GY | (25) 8883 | (25) V | (25) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 - 29 | — | — | — | — | — | Not Occupied | 26 - 29 | — | — | — | — | — |
| (30) 30 | (30) 0.35 | (30) WH / GN | (30) 5966 | (30) I | (30) — | (30) Approach Lamp Control | (30) 30 | (30) 0.5 | (30) WH / GN | (30) 5966 | (30) V | (30) — |
| 31 - 35 | — | — | — | — | — | Not Occupied | 31 - 35 | — | — | — | — | — |
| (36) 36 | (36) 0.35 | (36) GY / VT | (36) 2676 | (36) I | (36) — | (36) Right Front Door Exterior Switch Unlock Signal | (36) 36 | (36) 0.35 | (36) GY / VT | (36) 2676 | (36) V | (36) — |
| 37 - 38 | — | — | — | — | — | Not Occupied | 37 - 38 | — | — | — | — | — |
| (39) 39 | (39) 0 | (39) Coax Cable | (39) 4724 | (39) IV | (39) — | (39) Right Sideview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (39) 39 | (39) 0 | (39) Coax Cable | (39) 4724 | (39) VII | (39) — |
| 40 - 46 | — | — | — | — | — | Not Occupied | 40 - 46 | — | — | — | — | — |
| (47) 47 | (47) 2.5 | (47) BK | (47) 1250 | (47) III | (47) — | (47) Ground | (47) 47 | (47) 2.5 | (47) BK | (47) 1250 | (47) VI | (47) — |
| (48) 48 | (48) 2.5 | (48) RD / BN | (48) 4240 | (48) III | (48) — | (48) Battery Positive Voltage | (48) 48 | (48) 2.5 | (48) RD / BN | (48) 4240 | (48) VI | (48) — |

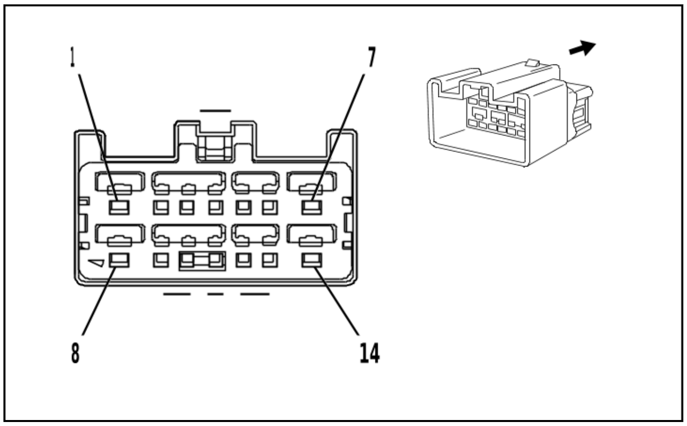
## X602 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI5)



4934172

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 7289-7630-30
- Service Connector: 13513604
- Description: 14-Way F 1.5, 2.8 YESC Series( BK)



1283905

**Connector Part Information**

- Harness Type: Body Rear Wiring Harness Extension Harness
- OEM Connector: 7282-6447-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 14-Way M 1.5, 2.8 YESC Series( L-GY)

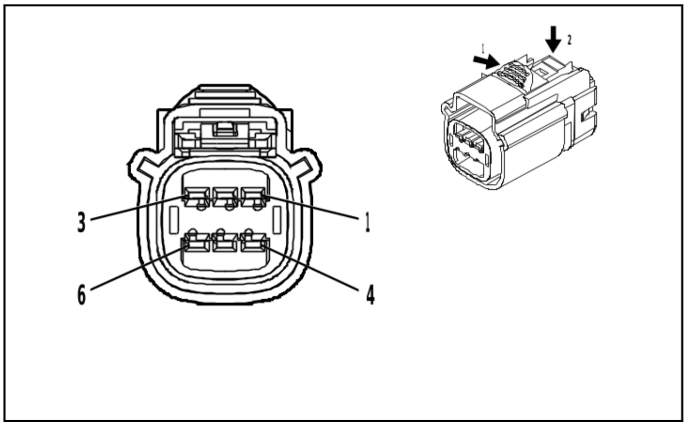
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575850 | J-35616-2A (GY) | J-38125-557 |
| II | 84962855 | J-35616-4A (PU) | J-38125-11A |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X602 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI5)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) BK | (1) 10117 | (1) II | (1) — | (1) AC Outlet Phase A Control | (1) 1 | (1) 0.75 | (1) BN | (1) 686 | (1) IV | (1) — |
| (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) I | (2) — | (2) AC Power Outlet Sensor High Reference | (2) 2 | (2) 0.5 | (2) VT / RD | (2) 4049 | (2) III | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / WH | (3) 1139 | (3) I | (3) — | (3) Run/ Crank Ignition 1 Voltage | (3) 3 | (3) 0.5 | (3) VT / WH | (3) 1139 | (3) III | (3) — |
| (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) I | (4) — | (4) DC/AC Inverter Relay Control | (4) 4 | (4) 0.5 | (4) WH / GN | (4) 4628 | (4) III | (4) — |
| (5) 5 | (5) 0.75 | (5) BU / BN | (5) 6807 | (5) I | (5) — | (5) DC/AC Inverter Control | (5) 5 | (5) 0.5 | (5) BU / BN | (5) 6807 | (5) III | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5 | (7) BK / WH | (7) 10120 | (7) II | (7) — | (7) AC Outlet 2 Phase A Control | (7) 7 | (7) 0.5 | (7) BN / WH | (7) 2262 | (7) IV | (7) — |
| (8) 8 | (8) 0.75 | (8) RD | (8) 10118 | (8) II | (8) — | (8) AC Outlet Phase B Control | (8) 8 | (8) 0.75 | (8) BU | (8) 6865 | (8) IV | (8) — |
| (9) 9 | (9) 0.5 | (9) BARE | (9) 10116 | (9) I | (9) — | (9) AC Outlet Low Reference | (9) 9 | (9) 0.5 | (9) BARE | (9) 2526 | (9) III | (9) — |
| (10) 10 | (10) 0.35 | (10) GN / BU | (10) 6133 | (10) I | (10) — | (10) Body Control Module LIN Bus 2 | (10) 10 | (10) 0.5 | (10) GN / BU | (10) 6133 | (10) III | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.75 | (12) GN / BN | (12) 2266 | (12) I | (12) — | (12) DC/AC Inverter Control 2 | (12) 12 | (12) 0.5 | (12) GN / BN | (12) 2266 | (12) III | (12) — |
| (13) 13 | (13) 0.5 | (13) BARE | (13) 10119 | (13) I | (13) — | (13) AC Outlet 2 Low Reference | (13) 13 | (13) 0.5 | (13) BARE | (13) 2544 | (13) III | (13) — |
| (14) 14 | (14) 0.5 | (14) RD / WH | (14) 10121 | (14) II | (14) — | (14) AC Outlet 2 Phase B Control | (14) 14 | (14) 0.5 | (14) BU / WH | (14) 2263 | (14) IV | (14) — |

## X604A Engine Wiring Harness to Active Grille Air Shutter Harness



5004419

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**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 15513504
- Service Connector: 84999473
- Description: 6-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Active Grille Air Shutter Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 6-Way M ( BK)

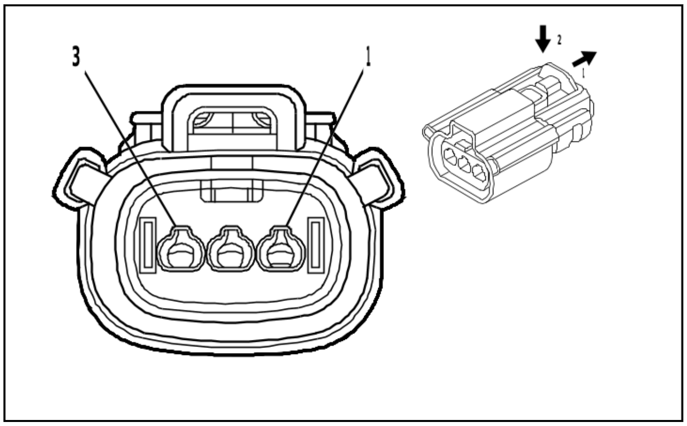
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X604A Engine Wiring Harness to Active Grille Air Shutter Harness

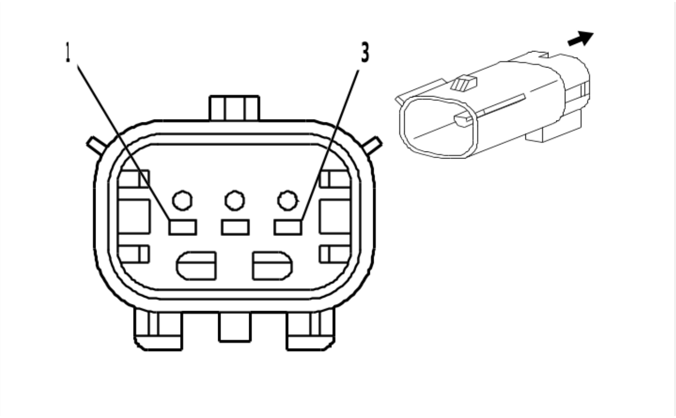
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) GN / VT | (1) 4621 | (1) I | (1) — | (1) Engine Control Module LIN Bus 1 | (1) 1 | (1) 0.5 | (1) GN / VT | (1) 4621 | (1) II | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 6550 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0.75 | (2) BK | (2) 6550 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) VT / BU | (3) 5705 | (3) I | (3) — | (3) Powertrain Main Relay Control | (3) 3 | (3) 0.5 | (3) VT / BU | (3) 5705 | (3) II | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) BU / GY | (5) 636 | (5) I | (5) — | (5) Ambient Air Temperature Sensor Signal | (5) 5 | (5) 0.5 | (5) BU / GY | (5) 636 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) BK / GY | (6) 626 | (6) I | (6) — | (6) Engine Control Vehicle Sensors Low Reference 1 | (6) 6 | (6) 0.5 | (6) BK / GY | (6) 626 | (6) II | (6) — |

### X604B Aeroshutter Extension Wiring Harness to Aeroshutter Jumper Wiring Harness (WMI)



5095610

**Connector Part Information**
- Harness Type: Aeroshutter Extension Wiring Harness
- OEM Connector: 13526813
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way F 1.5 Series, Sealed( BK)



1870038

**Connector Part Information**
- Harness Type: Aeroshutter Jumper Wiring Harness
- OEM Connector: 13526822
- Service Connector: Service by Harness - See Part Catalog
- Description: 3-Way M 1.5 MX Series, Sealed( BK)

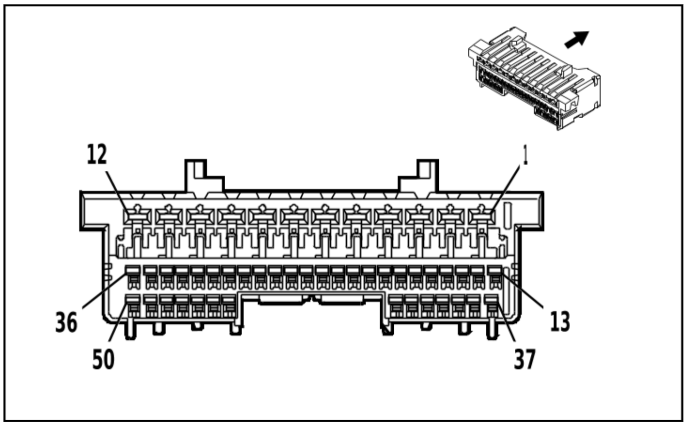
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

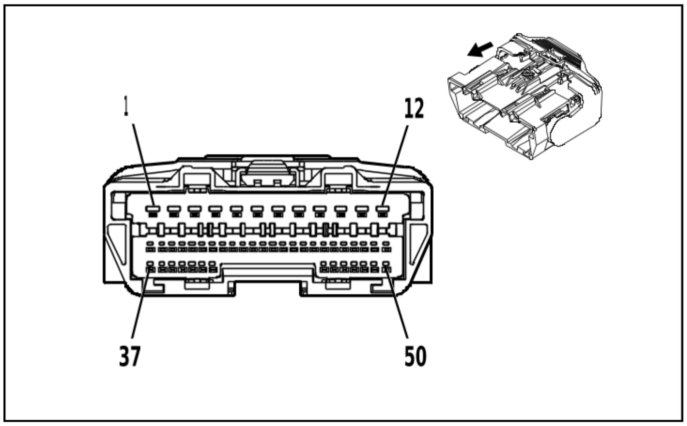
## X604B Aeroshutter Extension Wiring Harness to Aeroshutter Jumper Wiring Harness (WMI)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5705 | (1) I | (1) — | (1) Powertrain Main Relay Control | (1) 1 | (1) 0.5 | (1) VT / BU | (1) 5705 | (1) II | (1) — |
| (2) 2 | (2) 0.45 | (2) GN / VT | (2) 4621 | (2) I | (2) — | (2) Engine Control Module LIN Bus 1 | (2) 2 | (2) 0.75 | (2) GN / VT | (2) 4621 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) BK | (3) 6550 | (3) I | (3) — | (3) Ground | (3) 3 | (3) 0.5 | (3) BK | (3) 6550 | (3) II | (3) — |

## X605 Front Side Door Door Wiring Harness - Right to Front Side Door Door Lock Door Wiring Harness - Right



4997556



5022037

**Connector Part Information**
- Harness Type: Front Side Door Door Wiring Harness - Right
- OEM Connector: 35283943
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way F 1.2, 2.8 OCS Series( BK)

**Connector Part Information**
- Harness Type: Front Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 33390111
- Service Connector: Service by Harness - See Part Catalog
- Description: 50-Way M 1.2, 2.8 OCS Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | Not required | J-35616-13 (BU) | No Tool Required |
| V | Not required | J-35616-17 (L-GN) | No Tool Required |
| VI | Not required | J-35616-5 (PU) | No Tool Required |

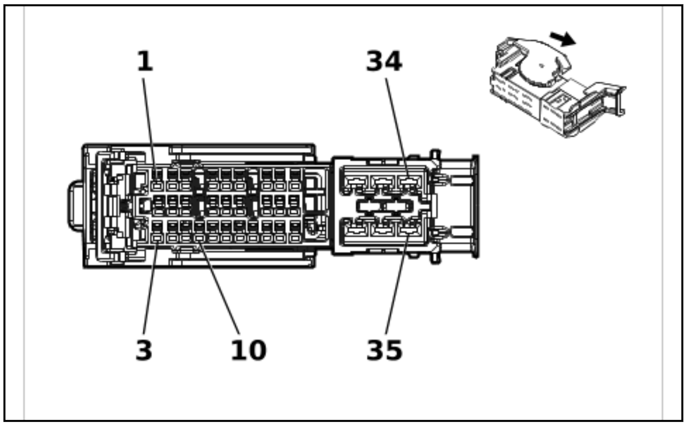
## X605 Front Side Door Door Wiring Harness - Right to Front Side Door Door Lock Door Wiring Harness - Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.35 | (3) BN / VT | (3) 607 | (3) III | (3) — | (3) Right Outside Rearview Mirror Heater Control | (3) 3 | (3) 0.35 | (3) BN / VT | (3) 607 | (3) VI | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.35 | (5) VT | (5) 4259 | (5) III | (5) — | (5) Right Front Door Lock Status Signal | (5) 5 | (5) 0.35 | (5) VT | (5) 4259 | (5) VI | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.35 | (7) VT / GY | (7) 2765 | (7) III | (7) — | (7) Window Switch Right Front Express Signal | (7) 7 | (7) 0.35 | (7) VT / GY | (7) 2765 | (7) VI | (7) — |

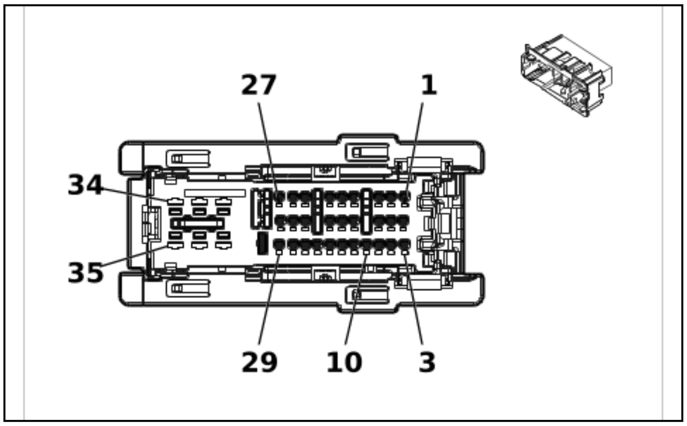
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (8) 8 | (8) 0.35 | (8) YE / WH | (8) 2793 | (8) III | (8) — | (8) Right Front Mirror Motor Fold Out Control | (8) 8 | (8) 0.35 | (8) YE / WH | (8) 2793 | (8) VI | (8) — |
| (9) 9 | (9) 0.35 | (9) BU / GY | (9) 2794 | (9) III | (9) — | (9) Right Front Mirror Motor Fold In Control | (9) 9 | (9) 0.35 | (9) BU / GY | (9) 2794 | (9) VI | (9) — |
| (10) 10 | (10) 0.35 | (10) BU / YE | (10) 2795 | (10) III | (10) — | (10) Right Front Mirror Position Sensor Up [+] Down [-] Signal | (10) 10 | (10) 0.35 | (10) BU / YE | (10) 2795 | (10) VI | (10) — |
| (11) 11 | (11) 0.35 | (11) YE / VT | (11) 2796 | (11) III | (11) — | (11) Right Front Mirror Motor Up [+] Down [-] Control | (11) 11 | (11) 0.35 | (11) YE / VT | (11) 2796 | (11) VI | (11) — |
| (12) 12 | (12) 0.35 | (12) WH | (12) 2797 | (12) III | (12) — | (12) Right Front Mirror Motor Common Control | (12) 12 | (12) 0.35 | (12) WH | (12) 2797 | (12) VI | (12) — |
| (13) 13 | (13) 0.35 | (13) GN / BK | (13) 2798 | (13) I | (13) — | (13) Right Front Mirror Motor Right [+] Left [-] Control | (13) 13 | (13) 0.35 | (13) GN / BK | (13) 2798 | (13) IV | (13) — |
| (14) 14 | (14) 0.35 | (14) YE / RD | (14) 2799 | (14) I | (14) — | (14) Right Front Mirror Position Sensor High Reference | (14) 14 | (14) 0.35 | (14) YE / RD | (14) 2799 | (14) IV | (14) — |
| (15) 15 | (15) 0.35 | (15) VT / WH | (15) 2800 | (15) I | (15) — | (15) Right Front Mirror Position Sensor Left [-] Right [+] Signal | (15) 15 | (15) 0.35 | (15) VT / WH | (15) 2800 | (15) IV | (15) — |
| (16) 16 | (16) 0.35 | (16) BK / GN | (16) 675 | (16) I | (16) — | (16) Right Outside Rearview Mirror Position Sensor Low Reference | (16) 16 | (16) 0.35 | (16) BK / GN | (16) 675 | (16) IV | (16) — |
| (17) 17 | (17) 0.35 | (17) GN | (17) 1184 | (17) I | (17) — | (17) Window Switch Right Front Up Signal | (17) 17 | (17) 0.35 | (17) GN | (17) 1184 | (17) IV | (17) — |
| (18) 18 | (18) 0.5 | (18) BK | (18) 1250 | (18) II | (18) — | (18) Ground | (18) 18 | (18) 0.35 | (18) BK | (18) 1250 | (18) IV | (18) — |
| (19) 19 | (19) 0.5 | (19) RD / BU | (19) 5240 | (19) II | (19) — | (19) Battery Positive Voltage | (19) 19 | (19) 0.5 | (19) RD / BU | (19) 5240 | (19) V | (19) — |
| (20) 20 | (20) 0.35 | (20) BN | (20) 5295 | (20) I | (20) — | (20) Window Switch Right Front Down Signal | (20) 20 | (20) 0.35 | (20) BN | (20) 5295 | (20) IV | (20) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (21) 21 | (21) 0.35 | (21) GN / YE | (21) 6134 | (21) I | (21) — | (21) Body Control Module LIN Bus 3 | (21) 21 | (21) 0.35 | (21) GN / YE | (21) 6134 | (21) IV | (21) — |
| (22) 22 | (22) 0.35 | (22) GY | (22) 1761 | (22) I | (22) — | (22) Right Side Object Detection LED Control | (22) 22 | (22) 0.35 | (22) GY | (22) 1761 | (22) IV | (22) — |
| 23 - 50 | — | — | — | — | — | Not Occupied | 23 - 50 | — | — | — | — | — |

### X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness



6425511



6423948

**Connector Part Information**
- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 6099-0202
- Service Connector: Service by Harness - See Part Catalog
- Description: 35-Way F 1.2 MCON, 2.8 YESC Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0197
- Service Connector: 13550105
- Description: 35-Way M 1.2 MCON, 2.8 YESC Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | 84616651 | J-35616-13 (BU) | J-38125-215A |
| V | 84888592 | J-35616-5 (PU) | J-38125-11A |

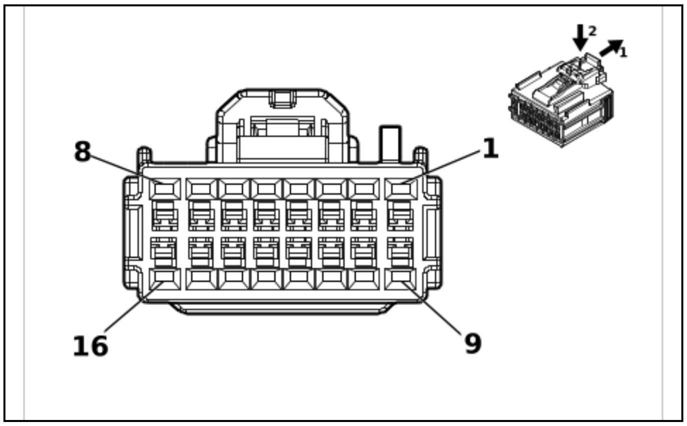
## X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.75 | (3) WH / BU | (3) 3266 | (3) II | (3) — | (3) Child Security Lock Motor Lock Control | (3) 3 | (3) 0.75 | (3) WH / BU | (3) 3266 | (3) IV | (3) — |
| 4 - 9 | — | — | — | — | — | Not Occupied | 4 - 9 | — | — | — | — | — |

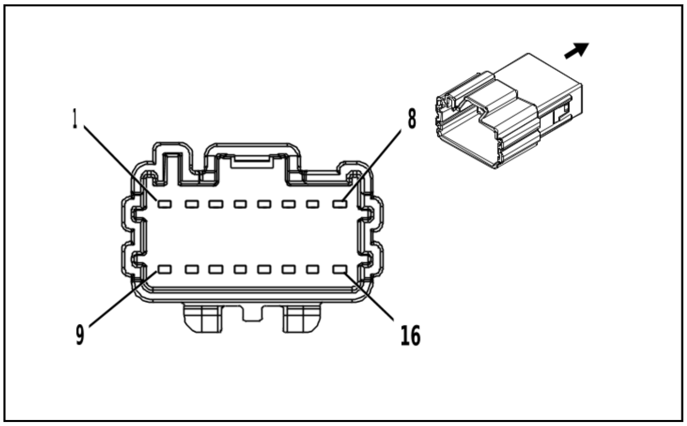
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (10) 10 | (10) 0.5 | (10) V T | (10) 43 01 | (10) II | (10) — | (10) Passive Entry Left Antenna Signal High | (10) 10 | (10) 0.35 | (10) V T | (10) 43 01 | (10) IV | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.35 | (12) V T / BU | (12) 40 01 | (12) I | (12) — | (12) Left Rear Door Lock Switch Lock Control | (12) 12 | (12) 0.35 | (12) V T / BU | (12) 40 01 | (12) IV | (12) — |
| (13) 13 | (13) 0.5 | (13) V T / GY | (13) 43 02 | (13) II | (13) — | (13) Passive Entry Left Antenna Signal Low | (13) 13 | (13) 0.35 | (13) V T / WH | (13) 43 02 | (13) IV | (13) — |
| 14 | — | — | — | — | — | Not Occupied | 14 | — | — | — | — | — |
| (15) 15 | (15) 0.35 | (15) WH / YE | (15) 40 02 | (15) I | (15) — | (15) Left Rear Door Lock Switch Unlock Control | (15) 15 | (15) 0.35 | (15) WH / YE | (15) 40 02 | (15) IV | (15) — |
| 16 - 17 | — | — | — | — | — | Not Occupied | 16 - 17 | — | — | — | — | — |
| (18) 18 | (18) 0.35 | (18) WH / VT | (18) 49 94 | (18) I | (18) — | (18) Left Rear Door Exterior Switch Unlock Signal | (18) 18 | (18) 0.35 | (18) WH / VT | (18) 49 94 | (18) IV | (18) — |
| 19 - 20 | — | — | — | — | — | Not Occupied | 19 - 20 | — | — | — | — | — |
| (21) 21 | (21) 0.35 | (21) G N / GY | (21) 61 35 | (21) I | (21) — | (21) Body Control Module LIN Bus 4 | (21) 21 | (21) 0.5 | (21) G N / GY | (21) 61 35 | (21) IV | (21) — |
| (22) 22 | (22) 0.5 | (22) Y E | (22) 68 17 | (22) II | (22) — | (22) LED Backlight Dimming Control 1 | (22) 22 | (22) 0.5 | (22) Y E | (22) 68 17 | (22) IV | (22) — |
| (23) 23 | (23) 0.35 | (23) V T / WH | (23) 66 75 | (23) I | (23) — | (23) Left Rear Door Lock Indicator Control | (23) 23 | (23) 0.35 | (23) V T / WH | (23) 66 75 | (23) IV | (23) — |
| (24) 24 | (24) 0.75 | (24) G N / BK | (24) 11 6 | (24) II | (24) — | (24) Left Rear Speaker [-] Control | (24) 24 | (24) 0.75 | (24) G N / BK | (24) 11 6 | (24) IV | (24) — |
| (25) 25 | (25) 0.35 | (25) B N / WH | (25) 32 69 | (25) I | (25) — | (25) Child Security Lock Actuator Status Signal Left Rear | (25) 25 | (25) 0.35 | (25) B N / WH | (25) 32 69 | (25) IV | (25) — |
| (26) 26 | (26) 0.35 | (26) WH / YE | (26) 75 57 | (26) I | (26) — | (26) Interior Door Handle Accent Lighting Control | (26) 26 | (26) 0.35 | (26) WH / YE | (26) 75 57 | (26) IV | (26) — |
| (27) 27 | (27) 0.75 | (27) G N | (27) 19 9 | (27) II | (27) — | (27) Left Rear Speaker [+] Control | (27) 27 | (27) 0.75 | (27) G N | (27) 19 9 | (27) IV | (27) — |
| 28 | — | — | — | — | — | Not Occupied | 28 | — | — | — | — | — |
| (29) 29 | (29) 0.75 | (29) B U / YE | (29) 10 91 | (29) II | (29) — | (29) Left Rear Door Lock Actuator Lock Control | (29) 29 | (29) 0.75 | (29) B U / YE | (29) 10 91 | (29) IV | (29) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (30) 30 | (30) 2.5 | (30) RD / GY | (30) 3540 | (30) III | (30) — | (30) Battery Positive Voltage | (30) 30 | (30) 2.5 | (30) RD / GY | (30) 3540 | (30) V | (30) — |
| (31) 31 | (31) 2.5 | (31) BK | (31) 1150 | (31) III | (31) — | (31) Ground | (31) 31 | (31) 2.5 | (31) BK | (31) 1150 | (31) V | (31) — |
| (32) 32 | (32) 0.75 | (32) WH | (32) 2679 | (32) III | (32) — | (32) Lock Actuators Unlock Control 1 | (32) 32 | (32) 0.75 | (32) WH | (32) 2679 | (32) V | (32) — |
| 33 - 35 | — | — | — | — | — | Not Occupied | 33 - 35 | — | — | — | — | — |

### X705 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left



6074391



4223086

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 6098-9012
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.2 MCON Series( BK)

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 6098-8828
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.2 Series( BK)

## Terminal Part Information

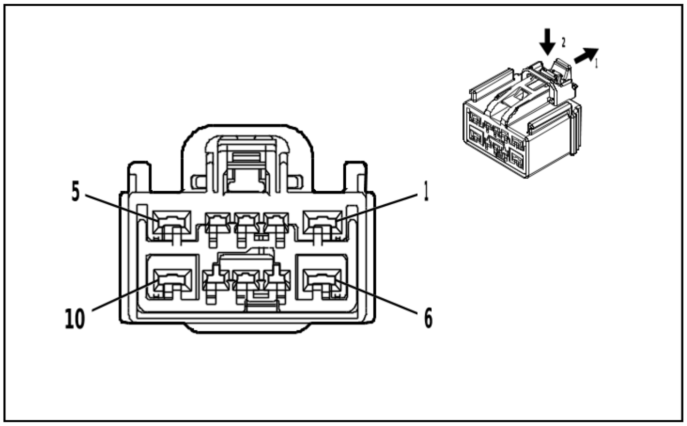
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-13 (BU) | No Tool Required |

## X705 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left

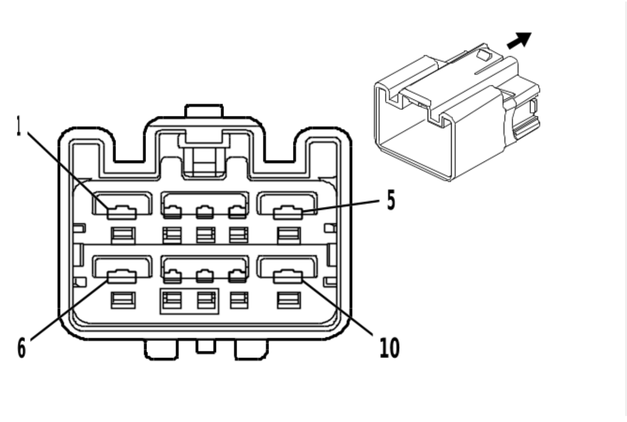
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 6817 | (1) II | (1) — | (1) LED Backlight Dimming Control 1 | (1) 1 | (1) 0.35 | (1) YE | (1) 6817 | (1) III | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.35 | (3) VT / WH | (3) 6675 | (3) I | (3) — | (3) Left Rear Door Lock Indicator Control | (3) 3 | (3) 0.35 | (3) VT / WH | (3) 6675 | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) VT / BU | (4) 4001 | (4) I | (4) — | (4) Left Rear Door Lock Switch Lock Control | (4) 4 | (4) 0.35 | (4) VT / BU | (4) 4001 | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) WH / YE | (5) 4002 | (5) I | (5) — | (5) Left Rear Door Lock Switch Unlock Control | (5) 5 | (5) 0.35 | (5) WH / YE | (5) 4002 | (5) III | (5) — |
| (6) 6 | (6) 0.35 | (6) WH / YE | (6) 7557 | (6) I | (6) — | (6) Interior Door Handle Accent Lighting Control | (6) 6 | (6) 0.35 | (6) WH / YE | (6) 7557 | (6) III | (6) — |
| 7 - 11 | — | — | — | — | — | Not Occupied | 7 - 11 | — | — | — | — | — |
| (12) 12 | (12) 0.75 | (12) BK | (12) 1150 | (12) II | (12) — | (12) Ground | (12) 12 | (12) 0.35 | (12) BK | (12) 1150 | (12) III | (12) — |
| 13 - 14 | — | — | — | — | — | Not Occupied | 13 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.35 | (15) GN / BU | (15) 4648 | (15) I | (15) — | (15) Left Rear Door Lock Status Signal | (15) 15 | (15) 0.35 | (15) GN / BU | (15) 4648 | (15) III | (15) — |
| 16 | — | — | — | — | — | Not Occupied | 16 | — | — | — | — | — |

### X706 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left



5020939



1851890

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Left
- OEM Connector: 7289-9153-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 Kaizen Series( L-GY)

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Left
- OEM Connector: 7282-6459-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.5, 2.8 Kaizen Series( L-GY)

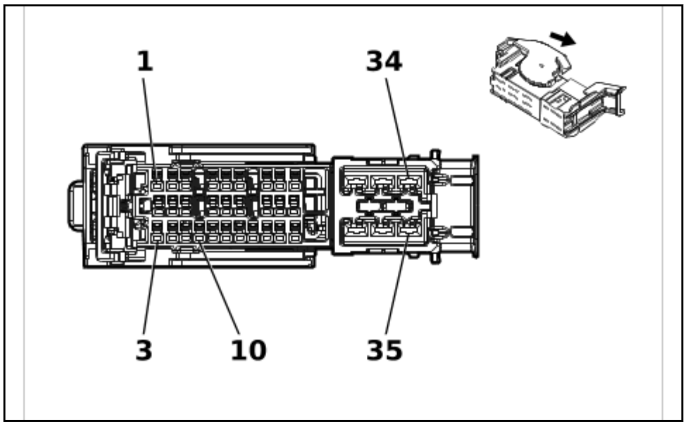
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

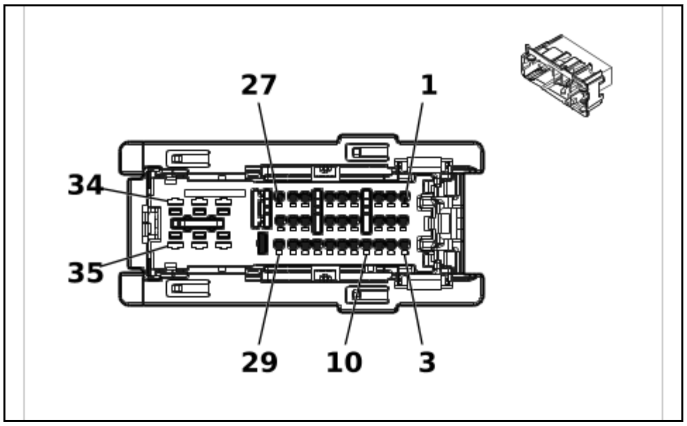
## X706 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / GY | (1) 3540 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / GY | (1) 3540 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.35 | (3) GN / GY | (3) 6135 | (3) I | (3) — | (3) Body Control Module LIN Bus 4 | (3) 3 | (3) 0.35 | (3) GN / GY | (3) 6135 | (3) III | (3) — |
| (4) 4 | (4) 0.35 | (4) GY | (4) 747 | (4) I | (4) — | (4) Left Rear Door Ajar Switch Signal | (4) 4 | (4) 0.35 | (4) GY | (4) 747 | (4) III | (4) — |
| (5) 5 | (5) 2 | (5) BU / VT | (5) 668 | (5) II | (5) — | (5) Left Rear Window Motor Up Control | (5) 5 | (5) 2 | (5) BU / VT | (5) 668 | (5) IV | (5) — |
| (6) 6 | (6) 2.5 | (6) BK | (6) 1150 | (6) II | (6) — | (6) Ground | (6) 6 | (6) 2.5 | (6) BK | (6) 1150 | (6) IV | (6) — |
| 7 - 9 | — | — | — | — | — | Not Occupied | 7 - 9 | — | — | — | — | — |
| (10) 10 | (10) 2 | (10) YE / BU | (10) 669 | (10) II | (10) — | (10) Left Rear Window Motor Down Control | (10) 10 | (10) 2 | (10) YE / BU | (10) 669 | (10) IV | (10) — |

## X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness



6425511



6423948

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 6099-0202
- Service Connector: Service by Harness - See Part Catalog
- Description: 35-Way F 1.2 MCON, 2.8 YESC Series( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6099-0197
- Service Connector: 13550105
- Description: 35-Way M 1.2 MCON, 2.8 YESC Series( BK)

### Terminal Part Information

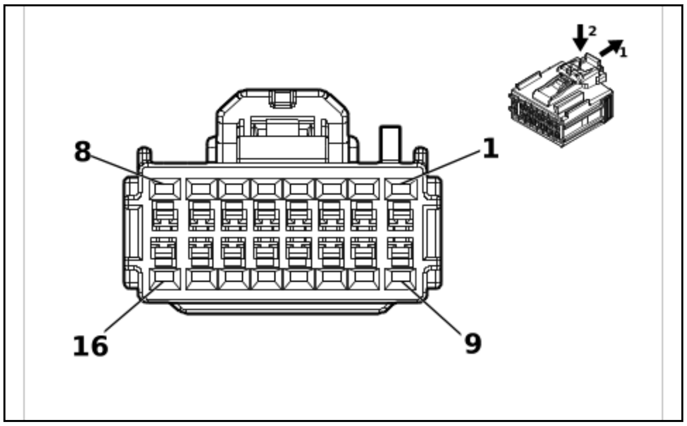
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | 84616651 | J-35616-13 (BU) | J-38125-215A |
| V | 84888592 | J-35616-5 (PU) | J-38125-11A |

### X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.75 | (3) WH / BU | (3) 3266 | (3) II | (3) — | (3) Child Security Lock Motor Lock Control | (3) 3 | (3) 0.75 | (3) WH / BU | (3) 3266 | (3) IV | (3) — |
| 4 - 9 | — | — | — | — | — | Not Occupied | 4 - 9 | — | — | — | — | — |
| (10) 10 | (10) 0.5 | (10) GN / YE | (10) 4303 | (10) II | (10) — | (10) Passive Entry Right Antenna Signal High | (10) 10 | (10) 0.35 | (10) GN / YE | (10) 4303 | (10) IV | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.35 | (12) GN / BN | (12) 4003 | (12) I | (12) — | (12) Right Rear Door Lock Switch Lock Control | (12) 12 | (12) 0.35 | (12) GN / BN | (12) 4003 | (12) IV | (12) — |
| (13) 13 | (13) 0.5 | (13) GN / BK | (13) 4304 | (13) II | (13) — | (13) Passive Entry Right Antenna Signal Low | (13) 13 | (13) 0.35 | (13) GN / BK | (13) 4304 | (13) IV | (13) — |
| 14 | — | — | — | — | — | Not Occupied | 14 | — | — | — | — | — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (15) 15 | (15) 0.35 | (15) B U / GY | (15) 40 04 | (15) I | (15) — | (15) Right Rear Door Lock Switch Unlock Control | (15) 15 | (15) 0.35 | (15) B U / GY | (15) 40 04 | (15) IV | (15) — |
| 16 - 17 | — | — | — | — | — | Not Occupied | 16 - 17 | — | — | — | — | — |
| (18) 18 | (18) 0.35 | (18) G Y / BU | (18) 49 95 | (18) I | (18) — | (18) Right Rear Door Exterior Switch Unlock Signal | (18) 18 | (18) 0.35 | (18) G Y / BU | (18) 49 95 | (18) IV | (18) — |
| 19 - 20 | — | — | — | — | — | Not Occupied | 19 - 20 | — | — | — | — | — |
| (21) 21 | (21) 0.35 | (21) G N / GY | (21) 61 35 | (21) I | (21) — | (21) Body Control Module LIN Bus 4 | (21) 21 | (21) 0.5 | (21) G N / GY | (21) 61 35 | (21) IV | (21) — |
| (22) 22 | (22) 0.5 | (22) Y E | (22) 68 17 | (22) II | (22) — | (22) LED Backlight Dimming Control 1 | (22) 22 | (22) 0.5 | (22) Y E | (22) 68 17 | (22) IV | (22) — |
| (23) 23 | (23) 0.35 | (23) Y E / BK | (23) 66 77 | (23) I | (23) — | (23) Right Rear Door Lock Indicator Control | (23) 23 | (23) 0.35 | (23) Y E / BK | (23) 66 77 | (23) IV | (23) — |
| (24) 24 | (24) 0.75 | (24) B U / BK | (24) 11 5 | (24) II | (24) — | (24) Right Rear Speaker [-] Control | (24) 24 | (24) 0.75 | (24) B U / BK | (24) 11 5 | (24) IV | (24) — |
| (25) 25 | (25) 0.35 | (25) G Y / BK | (25) 32 68 | (25) I | (25) — | (25) Child Security Lock Actuator Status Signal Right Rear | (25) 25 | (25) 0.35 | (25) G Y / BK | (25) 32 68 | (25) IV | (25) — |
| (26) 26 | (26) 0.35 | (26) WH / YE | (26) 75 57 | (26) I | (26) — | (26) Interior Door Handle Accent Lighting Control | (26) 26 | (26) 0.35 | (26) WH / YE | (26) 75 57 | (26) IV | (26) — |
| (27) 27 | (27) 0.75 | (27) WH | (27) 46 | (27) II | (27) — | (27) Right Rear Speaker [+] Control | (27) 27 | (27) 0.75 | (27) WH | (27) 46 | (27) IV | (27) — |
| 28 | — | — | — | — | — | Not Occupied | 28 | — | — | — | — | — |
| (29) 29 | (29) 0.75 | (29) V T / WH | (29) 10 94 | (29) II | (29) — | (29) Right Rear Door Lock Actuator Lock Control | (29) 29 | (29) 0.75 | (29) V T / WH | (29) 10 94 | (29) IV | (29) — |
| (30) 30 | (30) 2.5 | (30) R D / BN | (30) 42 40 | (30) III | (30) — | (30) Battery Positive Voltage | (30) 30 | (30) 2.5 | (30) R D / BN | (30) 42 40 | (30) V | (30) — |
| (31) 31 | (31) 2.5 | (31) B K | (31) 12 50 | (31) III | (31) — | (31) Ground | (31) 31 | (31) 2.5 | (31) B K | (31) 12 50 | (31) V | (31) — |
| (32) 32 | (32) 0.75 | (32) G Y / BK | (32) 26 80 | (32) III | (32) — | (32) Lock Actuators Unlock Control 2 | (32) 32 | (32) 0.75 | (32) G Y / BK | (32) 26 80 | (32) V | (32) — |
| 33 - 35 | — | — | — | — | — | Not Occupied | 33 - 35 | — | — | — | — | — |

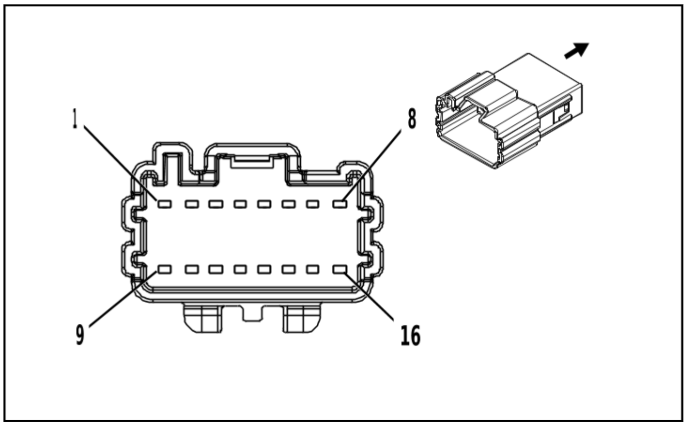
### X805 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right



6074391

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 6098-9012
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.2 MCON Series( BK)



4223086

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 6098-8828
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.2 Series( BK)

## Terminal Part Information

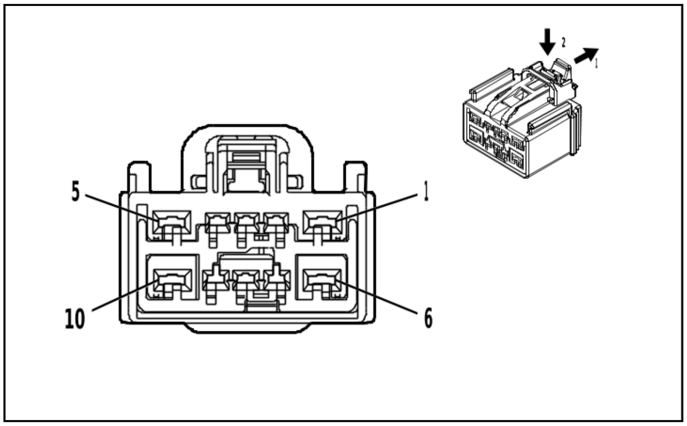
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-13 (BU) | No Tool Required |
| IV | Not required | J-35616-17 (L-GN) | No Tool Required |

## X805 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right

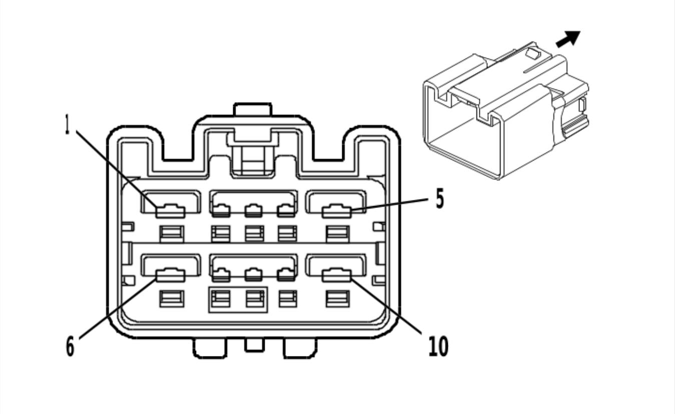
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE | (1) 6817 | (1) II | (1) — | (1) LED Backlight Dimming Control 1 | (1) 1 | (1) 0.35 | (1) YE | (1) 6817 | (1) III | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.35 | (3) YE / BK | (3) 6677 | (3) I | (3) — | (3) Right Rear Door Lock Indicator Control | (3) 3 | (3) 0.5 | (3) YE / BK | (3) 6677 | (3) IV | (3) — |
| (4) 4 | (4) 0.35 | (4) GN / BN | (4) 4003 | (4) I | (4) — | (4) Right Rear Door Lock Switch Lock Control | (4) 4 | (4) 0.35 | (4) GN / BN | (4) 4003 | (4) III | (4) — |
| (5) 5 | (5) 0.35 | (5) BU / GY | (5) 4004 | (5) I | (5) — | (5) Right Rear Door Lock Switch Unlock Control | (5) 5 | (5) 0.35 | (5) BU / GY | (5) 4004 | (5) III | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.35 | (6) WH / YE | (6) 7557 | (6) I | (6) — | (6) Interior Door Handle Accent Lighting Control | (6) 6 | (6) 0.35 | (6) WH / YE | (6) 7557 | (6) III | (6) — |
| 7 - 9 | — | — | — | — | — | Not Occupied | 7 - 9 | — | — | — | — | — |
| (10) 10 | (10) 0.35 | (10) WH / GY | (10) 4649 | (10) I | (10) — | (10) Right Rear Door Lock Status Signal | (10) 10 | (10) 0.35 | (10) WH / GY | (10) 4649 | (10) III | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.75 | (12) BK | (12) 1250 | (12) II | (12) — | (12) Ground | (12) 12 | (12) 0.35 | (12) BK | (12) 1250 | (12) IV | (12) — |
| 13 - 16 | — | — | — | — | — | Not Occupied | 13 - 16 | — | — | — | — | — |

### X806 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right



5020939



1851890

**Connector Part Information**

- Harness Type: Rear Side Door Door Wiring Harness - Right
- OEM Connector: 7289-9153-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way F 1.5, 2.8 Kaizen Series( L-GY)

**Connector Part Information**

- Harness Type: Rear Side Door Door Lock Door Wiring Harness - Right
- OEM Connector: 7282-6459-40
- Service Connector: Service by Harness - See Part Catalog
- Description: 10-Way M 1.5, 2.8 Kaizen Series( L-GY)

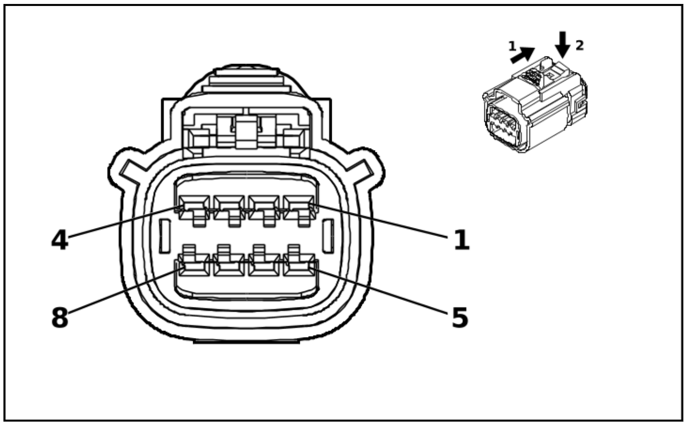
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

## X806 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / BN | (1) 4240 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 2.5 | (1) RD / BN | (1) 4240 | (1) IV | (1) — |
| (2) 2 | (2) 0.35 | (2) GY | (2) 748 | (2) I | (2) — | (2) Right Rear Door Ajar Switch Signal | (2) 2 | (2) 0.35 | (2) GY | (2) 748 | (2) III | (2) — |
| (3) 3 | (3) 0.35 | (3) GN / GY | (3) 6135 | (3) I | (3) — | (3) Body Control Module LIN Bus 4 | (3) 3 | (3) 0.35 | (3) GN / GY | (3) 6135 | (3) III | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 2 | (5) GN / BK | (5) 671 | (5) II | (5) — | (5) Right Rear Window Motor Down Control | (5) 5 | (5) 2 | (5) GN / BK | (5) 671 | (5) IV | (5) — |
| (6) 6 | (6) 2.5 | (6) BK | (6) 1250 | (6) II | (6) — | (6) Ground | (6) 6 | (6) 2.5 | (6) BK | (6) 1250 | (6) IV | (6) — |
| 7 - 9 | — | — | — | — | — | Not Occupied | 7 - 9 | — | — | — | — | — |
| (10) 10 | (10) 2 | (10) BU / GY | (10) 670 | (10) II | (10) — | (10) Right Rear Window Motor Up Control | (10) 10 | (10) 2 | (10) BU / GY | (10) 670 | (10) IV | (10) — |

### X900R Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)



5253496

—

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 15514667
- Service Connector: 84766296
- Description: 8-Way F 1.5 OCS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Police Accessories Wiring Harness
- OEM Connector: Not Available
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M ( BK)

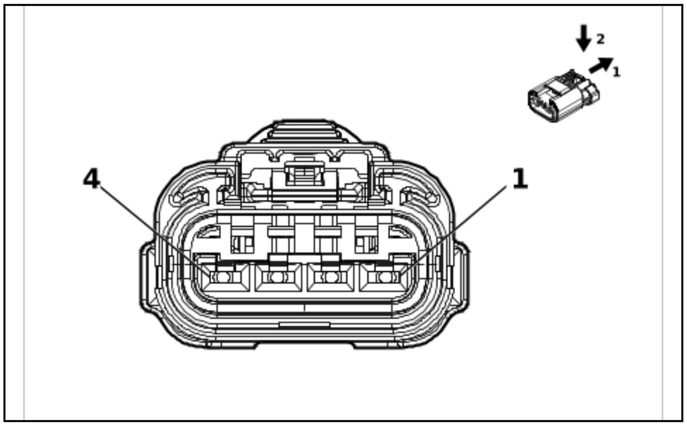
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | No Tool Required | No Tool Required |

## X900R Body Wiring Harness to Police Accessories Wiring Harness (5W4 / 9C1)

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN | (1) 8892 | (1) I | (1) — | (1) Police Rear Corner Light Control | (1) 1 | (1) 0.75 | (1) GN | (1) 8892 | (1) II | (1) — |
| (2) 2 | (2) 1 | (2) BK | (2) 2050 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 1 | (2) BK | (2) 2050 | (2) II | (2) — |
| (3) 3 | (3) 0.75 | (3) BU / WH | (3) 8891 | (3) I | (3) — | (3) Police Corner Strobe Synchronization Signal | (3) 3 | (3) 0.75 | (3) BU / WH | (3) 8891 | (3) II | (3) — |
| (4) 4 | (4) 0.75 | (4) YE | (4) 8894 | (4) I | (4) — | (4) Police Rear Corner Strobe Control | (4) 4 | (4) 0.75 | (4) YE | (4) 8894 | (4) II | (4) — |
| (5) 5 | (5) 0.75 | (5) GN | (5) 8892 | (5) I | (5) — | (5) Police Rear Corner Light Control | (5) 5 | (5) 0.75 | (5) GN | (5) 8892 | (5) II | (5) — |
| (6) 6 | (6) 0.75 | (6) BU / WH | (6) 8891 | (6) I | (6) — | (6) Police Corner Strobe Synchronization Signal | (6) 6 | (6) 0.75 | (6) BU / WH | (6) 8891 | (6) II | (6) — |
| (7) 7 | (7) 1 | (7) BK | (7) 2050 | (7) I | (7) — | (7) Ground | (7) 7 | (7) 1 | (7) BK | (7) 2050 | (7) II | (7) — |
| (8) 8 | (8) 0.75 | (8) YE | (8) 8894 | (8) I | (8) — | (8) Police Rear Corner Strobe Control | (8) 8 | (8) 0.75 | (8) YE | (8) 8894 | (8) II | (8) — |

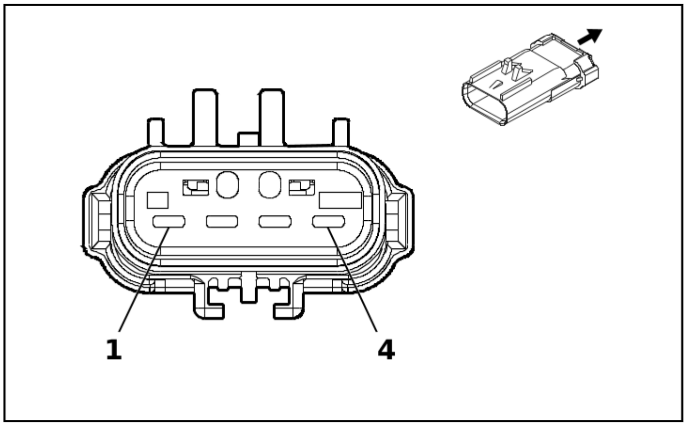
## X904L Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Left



5873683

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 35333812
- Service Connector: 86584700
- Description: 4-Way F 2.8 APEX Series, Sealed( GY)



5246651

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness - Left
- OEM Connector: 13518460
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 2.8 APEX Series, Sealed( GY)

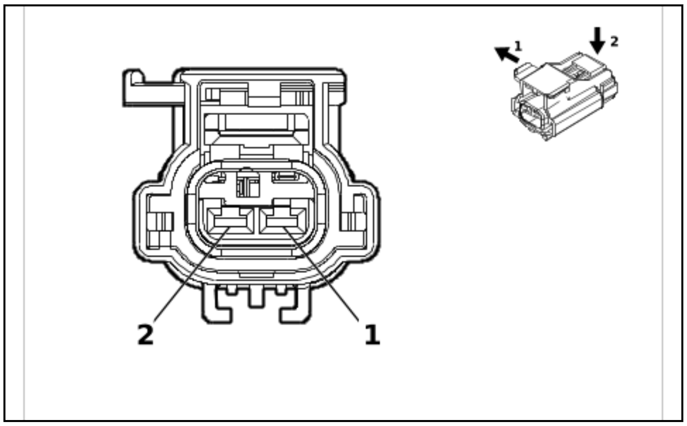
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-4A (PU) | No Tool Required |
| III | Not required | J-35616-5 (PU) | No Tool Required |

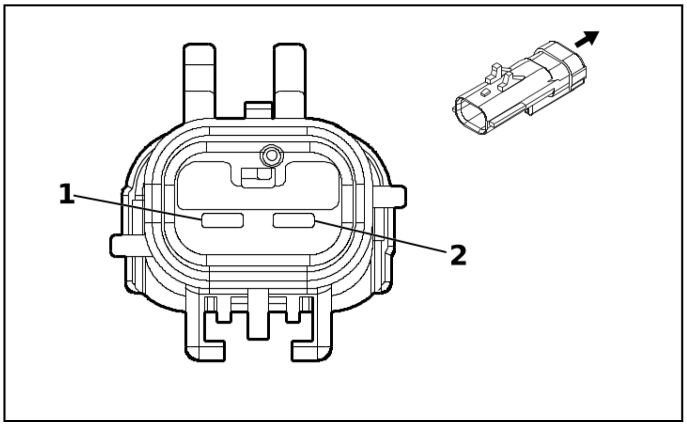
## X904L Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Left

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.75 | (1) GN / YE | (1) 1616 | (1) I | (1) — | (1) Rear Brake Pad Wear Sensor Signal | (1) 1 | (1) 0.75 | (1) GN / YE | (1) 1616 | (1) III | (1) — |
| (2) 2 | (2) 0.75 | (2) BK | (2) 2050 | (2) I | (2) — | (2) Ground | (2) 2 | (2) 0.75 | (2) BK | (2) 2050 | (2) III | (2) — |
| (3) 3 | (3) 4 | (3) GY / BK | (3) 4369 | (3) II | (3) — | (3) Left Park Brake Motor Low Reference | (3) 3 | (3) 2.5 | (3) GY / BK | (3) 4369 | (3) III | (3) — |
| (4) 4 | (4) 4 | (4) WH | (4) 2001 | (4) II | (4) — | (4) Left Park Brake Motor Apply Control | (4) 4 | (4) 2.5 | (4) WH | (4) 2001 | (4) III | (4) Z95+ ZW7+ Z56 |

### X904R Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Right



5377357



5246766

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 15380781
- Service Connector: 84867144
- Description: 2-Way F 2.8 APEX Series, Sealed( GY)

**Connector Part Information**

- Harness Type: Chassis Rear Wiring Harness Extension Harness - Right
- OEM Connector: 54200211
- Service Connector: Service by Harness - See Part Catalog
- Description: 2-Way M 2.8 APEX Series, Sealed( GY)

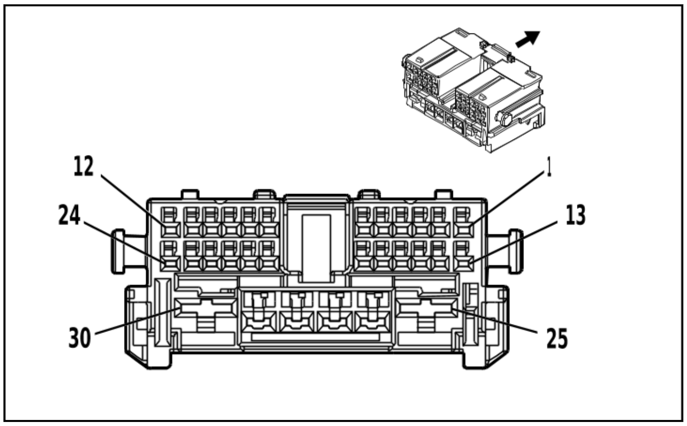
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-35 (VT) | No Tool Required |
| II | Not required | J-35616-5 (PU) | No Tool Required |

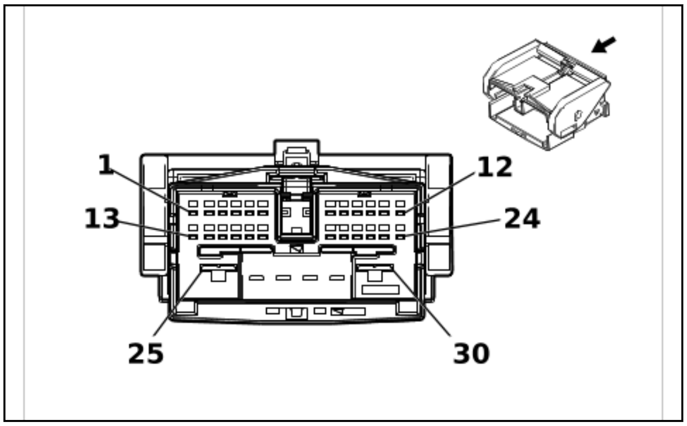
## X904R Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Right

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2 | (1) GY | (1) 4368 | (1) I | (1) — | (1) Right Park Brake Motor Low Reference | (1) 1 | (1) 2.5 | (1) GY | (1) 4368 | (1) II | (1) — |
| (2) 2 | (2) 2 | (2) GN / VT | (2) 1988 | (2) I | (2) — | (2) Right Park Brake Motor Apply Control | (2) 2 | (2) 2.5 | (2) GN / VT | (2) 1988 | (2) II | (2) — |

### X905 Liftgate Wiring Harness to Body Wiring Harness



4253192



4249201

**Connector Part Information**
- Harness Type: Liftgate Wiring Harness
- OEM Connector: 7298-4329-30
- Service Connector: Service by Harness - See Part Catalog
- Description: 30-Way F 1.2 MCON, 2.8, 6.3 YESC Series( BK)

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 7297-4331-30
- Service Connector: 13539008
- Description: 30-Way M 1.2 MCON, 2.8, 6.3 YESC Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-42 (RD) | No Tool Required |
| III | Not required | J-35616-4A (PU) | No Tool Required |
| IV | 13580023 | J-35616-43 (RD) | J-38125-11A |
| V | 84888592 | J-35616-5 (PU) | J-38125-11A |
| VI | 87838750 | J-35616-13 (BU) | J-38125-215A |

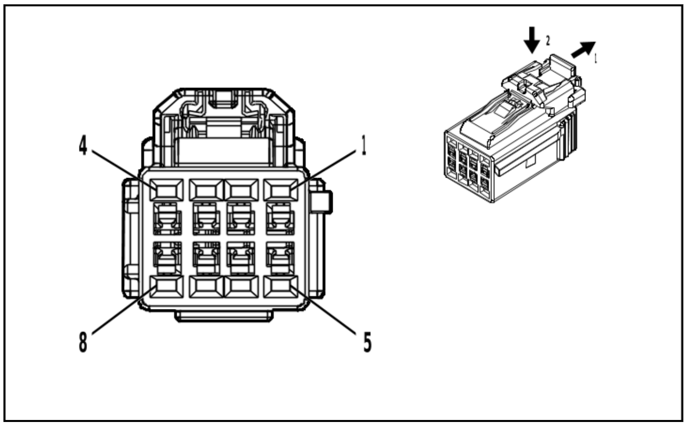
## X905 Liftgate Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) YE / BK | (1) 8085 | (1) I | (1) — | (1) Rear Closure Latch Primary Status | (1) 1 | (1) 0.35 | (1) YE / BK | (1) 8085 | (1) VI | (1) — |
| (2) 2 | (2) 0.5 | (2) GN / YE | (2) 6846 | (2) I | (2) — | (2) Rear License Plate Lamp Control | (2) 2 | (2) 0.35 | (2) GN / YE | (2) 6846 | (2) VI | (2) — |

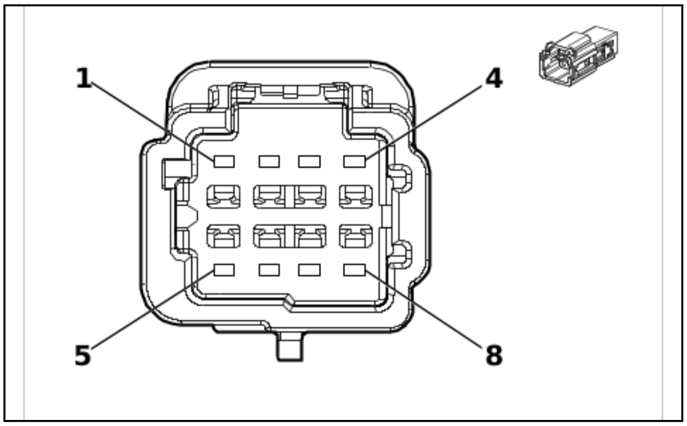
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (3) 3 | (3) 0.5 | (3) BU / GN | (3) 4089 | (3) I | (3) — | (3) Rear Closure Motor Control | (3) 3 | (3) 0.35 | (3) BU / GN | (3) 4089 | (3) VI | (3) — |
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) GN / BU | (5) 2856 | (5) I | (5) — | (5) Body Control Module LIN Bus 10 | (5) 5 | (5) 0.35<br>(5) 0.5 | (5) GN / BU<br>(5) GN / BU | (5) 2856<br>(5) 2856 | (5) VI<br>(5) VI | (5) - AS8<br>(5) AS8 |
| (6) 6 | (6) 0.5<br>(6) 0.5 | (6) VT / GY<br>(6) WH / VT | (6) 1303<br>(6) 12481 | (6) I<br>(6) I | (6) TB4<br>(6) TCP | (6) Liftgate Ajar Switch Signal 1<br>(6) Hands Free Closure Release Sensor Alarm Control | (6) 6 | (6) 0.35<br>(6) 0.35 | (6) VT / GY<br>(6) WH / VT | (6) 1303<br>(6) 12481 | (6) VI<br>(6) VI | (6) TB4<br>(6) TCP |
| (7) 7 | (7) 0.75 | (7) VT / GN | (7) 8869 | (7) I | (7) 5W4 / 9C1 | (7) Police Liftgate Strobe Rear On OFF Control | (7) 7 | (7) 0.35 | (7) VT / GN | (7) 8869 | (7) VI | (7) 5W4 / 9C1 |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) GY / BK | (9) 2680 | (9) I | (9) — | (9) Lock Actuators Unlock Control 2 | (9) 9 | (9) 0.75 | (9) GY / BK | (9) 2680 | (9) VI | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / VT | (10) 4656 | (10) I | (10) — | (10) Rear Closure Object Sensor Low Reference | (10) 10 | (10) 0.35 | (10) BK / VT | (10) 4656 | (10) VI | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.5 | (12) BU / YE | (12) 2279 | (12) I | (12) — | (12) Liftgate Window Ajar Switch Signal | (12) 12 | (12) 0.35 | (12) BU / YE | (12) 2279 | (12) VI | (12) — |
| (13) 13 | (13) 0.5 | (13) GY / WH | (13) 4658 | (13) I | (13) — | (13) Rear Closure Switch LED Control | (13) 13 | (13) 0.35 | (13) GY / WH | (13) 4658 | (13) VI | (13) — |
| 14 - 15 | — | — | — | — | — | Not Occupied | 14 - 15 | — | — | — | — | — |
| (16) 16 | (16) 0.5 | (16) YE / BU | (16) 5797 | (16) I | (16) — | (16) Rear Closure Handle Switch Open Signal | (16) 16 | (16) 0.35 | (16) YE / BU | (16) 5797 | (16) VI | (16) — |
| (17) 17 | (17) 0.5 | (17) GY / GN | (17) 6190 | (17) I | (17) — | (17) Liftgate Window/Rear Compartment Lid, Exterior Unlatch Signal | (17) 17 | (17) 0.35 | (17) GY / GN | (17) 6190 | (17) VI | (17) — |
| 18 - 20 | — | — | — | — | — | Not Occupied | 18 - 20 | — | — | — | — | — |
| (21) 21 | (21) 0.5 | (21) GY / VT | (21) 4678 | (21) I | (21) — | (21) Rear Closure Latch Unlatch Status | (21) 21 | (21) 0.35 | (21) GY / VT | (21) 4678 | (21) VI | (21) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (22) 22 | (22) 0.5 | (22) WH / GN | (22) 8084 | (22) I | (22) — | (22) Rear Closure Latch Neutral Status | (22) 22 | (22) 0.35 | (22) WH / GN | (22) 8084 | (22) VI | (22) — |
| (23) 23 | (23) 0.5 | (23) GN | (23) 4657 | (23) I | (23) — | (23) Rear Closure Switch Signal | (23) 23 | (23) 0.35 | (23) GN | (23) 4657 | (23) VI | (23) — |
| (24) 24 | (24) 0.5 | (24) BU / WH | (24) 6128 | (24) I | (24) — | (24) Rear Closure Unlatch Actuator Unlatch Control | (24) 24 | (24) 0.5 | (24) BU / WH | (24) 6128 | (24) VI | (24) — |
| (25) 25 | (25) 2.5 | (25) BN / VT | (25) 293 | (25) II | (25) — | (25) Rear Defogger Grid Control | (25) 25 | (25) 2.5 | (25) BN / VT | (25) 293 | (25) IV | (25) — |
| (26) 26 | (26) 1 | (26) RD / YE | (26) 3040 | (26) III | (26) — | (26) Battery Positive Voltage | (26) 26 | (26) 1 | (26) RD / YE | (26) 3040 | (26) V | (26) — |
| (27) 27 | (27) 0.5<br>(27) 1 | (27) VT<br>(27) BU / GY | (27) 8866<br>(27) 4682 | (27) III<br>(27) III | (27) 5W4 / 9C1<br>(27) TB5/TCP | (27) Police Liftgate Strobe Control<br>(27) Rear Closure Cinch Latch Motor Release Control | (27) 27 | (27) 0.5<br>(27) 1 | (27) VT<br>(27) BU / GY | (27) 8866<br>(27) 4682 | (27) V<br>(27) V | (27) 5W4 / 9C1<br>(27) TB5/TCP |
| (28) 28 | (28) 0.75<br>(28) 1 | (28) WH<br>(28) BN | (28) 8867<br>(28) 4681 | (28) III<br>(28) III | (28) 5W4 / 9C1<br>(28) TB5/TCP | (28) Police Liftgate Strobe Synchronization Signal<br>(28) Rear Closure Cinch Latch Motor Cinch Control | (28) 28 | (28) 0.75<br>(28) 1 | (28) WH<br>(28) BN | (28) 8867<br>(28) 4681 | (28) V<br>(28) V | (28) 5W4 / 9C1<br>(28) TB5/TCP |
| (29) 29 | (29) 1 | (29) BK | (29) 2050 | (29) III | (29) — | (29) Ground | (29) 29 | (29) 1 | (29) BK | (29) 2050 | (29) V | (29) — |
| (30) 30 | (30) 2.5 | (30) BK | (30) 2050 | (30) II | (30) — | (30) Ground | (30) 30 | (30) 2.5 | (30) BK | (30) 2050 | (30) IV | (30) — |

## X907 Rear License Plate Lamp Wiring Harness to Liftgate Wiring Harness



5086387



5751475

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way F 1.2 Series( BK)

**Connector Part Information**

- Harness Type: Liftgate Wiring Harness
- OEM Connector: 6098-9129
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.2 MBS Series( BK)

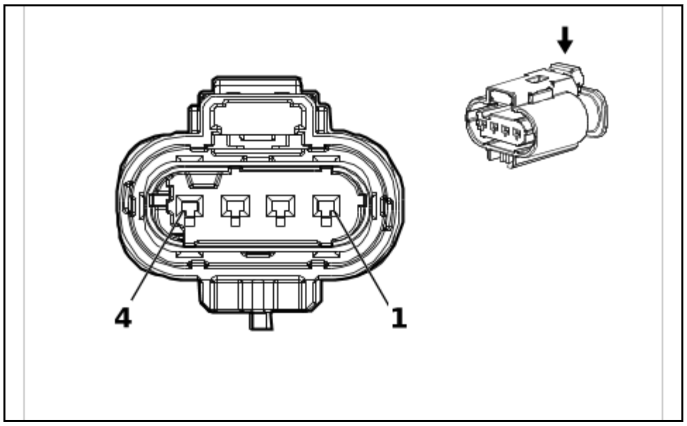
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-13 (BU) | No Tool Required |
| IV | Not required | J-35616-17 (L-GN) | No Tool Required |

## X907 Rear License Plate Lamp Wiring Harness to Liftgate Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | — | — | — | — | — | Not Occupied | 1 | — | — | — | — | — |
| (2) 2 | (2) 0.35 | (2) GN / YE | (2) 6846 | (2) I | (2) — | (2) Rear License Plate Lamp Control | (2) 2 | (2) 0.5 | (2) GN / YE | (2) 6846 | (2) IV | (2) — |
| 3 - 4 | — | — | — | — | — | Not Occupied | 3 - 4 | — | — | — | — | — |
| (5) 5 | (5) 0.35 | (5) GY / GN | (5) 6190 | (5) I | (5) — | (5) Liftgate Window/Rear Compartment Lid, Exterior Unlatch Signal | (5) 5 | (5) 0.5 | (5) GY / GN | (5) 6190 | (5) IV | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5 | (7) BK | (7) 2050 | (7) II | (7) — | (7) Ground | (7) 7 | (7) 0.75 | (7) BK | (7) 2050 | (7) III | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |

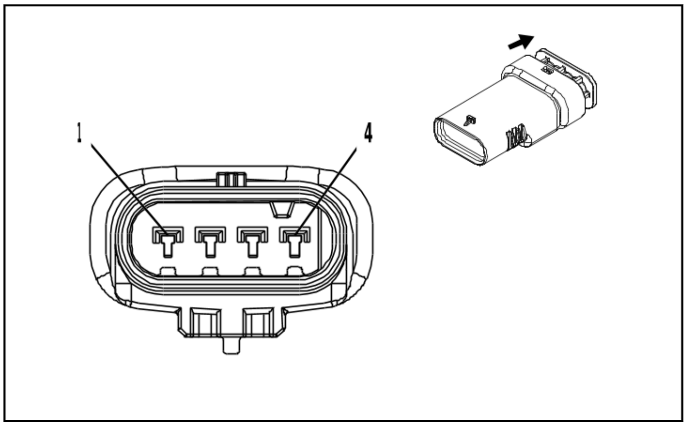
## X944 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness



5402120

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 10531905
- Service Connector: 85877329
- Description: 4-Way F 1.2 Multilock Series, Sealed( BK)



4560843

**Connector Part Information**

- Harness Type: Engine Coolant Temperature Sensor Harness
- OEM Connector: 13503594
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.2 Multilock Series, Sealed( GY)

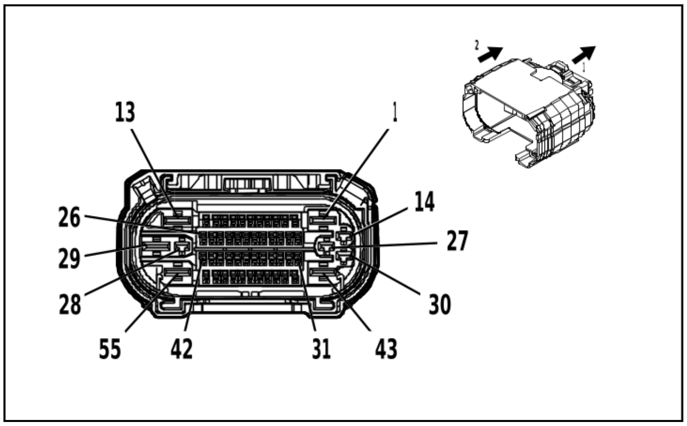
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-16 (L-GN) | No Tool Required |
| II | Not required | J-35616-13 (BU) | No Tool Required |

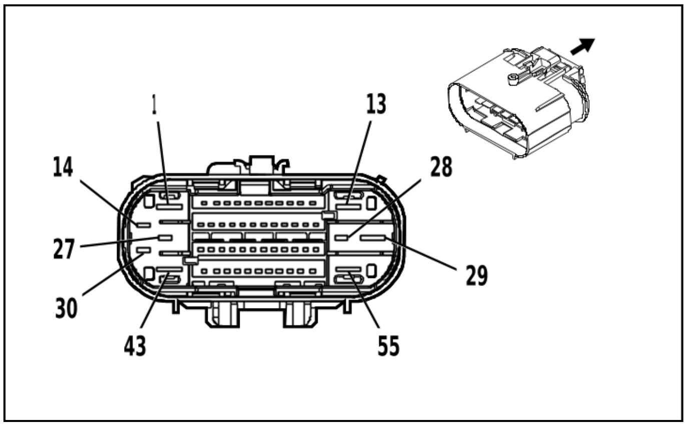
### X944 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) VT | (3) 2988 | (3) I | (3) — | (3) Engine Outlet Coolant Temperature Signal | (3) 3 | (3) 0.5 | (3) VT | (3) 2988 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) BK / GY | (4) 626 | (4) I | (4) — | (4) Engine Control Vehicle Sensors Low Reference 1 | (4) 4 | (4) 0.5 | (4) BK / GY | (4) 626 | (4) II | (4) — |

### X950 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness



4992168



4993301

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness
- OEM Connector: 13522700
- Service Connector: Service by Harness - See Part Catalog
- Description: 55-Way F 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 35205173
- Service Connector: 84727364
- Description: 55-Way M 1.2 OCS, 2.8, 6.3 CTS Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | 84867140 | J-35616-13 (BU) | J-38125-553 |

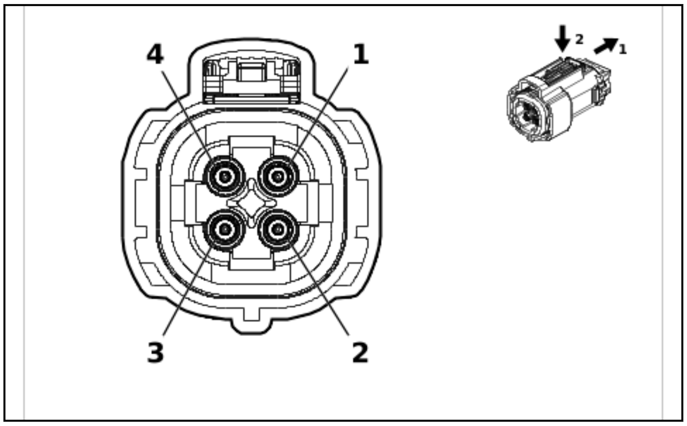
## X950 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 3 | — | — | — | — | — | Not Occupied | 1 - 3 | — | — | — | — | — |
| (4) 4 | (4) 0.5 | (4) BK / WH | (4) 251 | (4) II | (4) — | (4) Signal Ground<br>(4) Signal Ground | (4) 4 | (4) 0.75<br>(4) 0.5 | (4) BK / WH<br>(4) BK / WH | (4) 251<br>(4) 251 | (4) III<br>(4) III | (4) - UGN<br>(4) UGN |
| 5 | — | — | — | — | — | Not Occupied | 5 | — | — | — | — | — |
| (6) 6 | (6) 0.5 | (6) BN / GY | (6) 5061 | (6) II | (6) — | (6) Left Front Fog Lamp Control | (6) 6 | (6) 0.5 | (6) BN / GY | (6) 5061 | (6) III | (6) — |
| (7) 7 | (7) 0.5 | (7) GY | (7) 3154 | (7) II | (7) — | (7) Left Front Advanced Parking Assist Side Object Sensor Signal | (7) 7 | (7) 0.5 | (7) GY | (7) 3154 | (7) III | (7) — |
| 8 | — | — | — | — | — | Not Occupied | 8 | — | — | — | — | — |
| (9) 9 | (9) 0.5 | (9) GN | (9) 3155 | (9) II | (9) — | (9) Right Front Advanced Parking Assist Side Object Sensor Signal | (9) 9 | (9) 0.5 | (9) GN | (9) 3155 | (9) III | (9) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | — | — | — | — | — | Not Occupied | 10 | — | — | — | — | — |
| (11) 11 | (11) 0.5 | (11) WH / GY | (11) 5217 | (11) II | (11) — | (11) Right Front Outer Parking Assist Sensor | (11) 11 | (11) 0.5 | (11) WH / GY | (11) 5217 | (11) III | (11) — |
| 12 - 14 | — | — | — | — | — | Not Occupied | 12 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.5 | (15) BN | (15) 6581 | (15) II | (15) — | (15) Front Parking Assist Display Control | (15) 15 | (15) 0.5 | (15) BN | (15) 6581 | (15) III | (15) — |
| (16) 16 | (16) 0.5 | (16) YE / GY | (16) 5216 | (16) II | (16) — | (16) Left Front Middle Parking Assist Sensor | (16) 16 | (16) 0.5 | (16) YE / GY | (16) 5216 | (16) III | (16) — |
| (17) 17 | (17) 0.5 | (17) RD / GN | (17) 3140 | (17) II | (17) — | (17) Battery Positive Voltage | (17) 17 | (17) 0.5 | (17) RD / GN | (17) 3140 | (17) III | (17) — |
| (18) 18 | (18) 0.5 | (18) BK / BU | (18) 5214 | (18) II | (18) — | (18) Front Parking Assist Sensor Low Reference | (18) 18 | (18) 0.5 | (18) BK / BU | (18) 5214 | (18) III | (18) — |
| 19 | — | — | — | — | — | Not Occupied | 19 | — | — | — | — | — |
| (20) 20 | (20) 0.5 | (20) VT / WH | (20) 5215 | (20) II | (20) — | (20) Left Front Outer Parking Assist Sensor | (20) 20 | (20) 0.5 | (20) VT / WH | (20) 5215 | (20) III | (20) — |
| 21 - 22 | — | — | — | — | — | Not Occupied | 21 - 22 | — | — | — | — | — |
| (23) 23 | (23) 0.5 | (23) BU / GN | (23) 1253 | (23) II | (23) — | (23) Right Front Park Lamp Control | (23) 23 | (23) 0.5 | (23) BU / GN | (23) 1253 | (23) III | (23) — |
| 24 - 25 | — | — | — | — | — | Not Occupied | 24 - 25 | — | — | — | — | — |
| (26) 26 | (26) 0.5 | (26) VT / GY | (26) 5218 | (26) II | (26) — | (26) Right Front Middle Parking Assist Sensor | (26) 26 | (26) 0.5 | (26) VT / GY | (26) 5218 | (26) III | (26) — |
| 27 - 30 | — | — | — | — | — | Not Occupied | 27 - 30 | — | — | — | — | — |
| (31) 31 | (31) 0.5 | (31) WH / YE | (31) 1254 | (31) II | (31) — | (31) Left Front Park Lamp Control | (31) 31 | (31) 0.5 | (31) WH / YE | (31) 1254 | (31) III | (31) — |
| (32) 32 | (32) 0.35 | (32) WH / GY | (32) 4104 | (32) I | (32) — | (32) AUTOSAR CAN Bus [-] 8 Serial Data | (32) 32 | (32) 0.35 | (32) WH / GY | (32) 4104 | (32) III | (32) — |
| (33) 33 | (33) 0.35 | (33) BU / GY | (33) 4105 | (33) I | (33) — | (33) AUTOSAR CAN Bus [+] 8 Serial Data | (33) 33 | (33) 0.35 | (33) BU / GY | (33) 4105 | (33) III | (33) — |
| 34 | — | — | — | — | — | Not Occupied | 34 | — | — | — | — | — |
| (35) 35 | (35) 0.5 | (35) WH / YE | (35) 11325 | (35) II | (35) — | (35) Virtual Key Private CAN Bus [-] Serial Data | (35) 35 | (35) 0.5 | (35) WH / YE | (35) 11325 | (35) III | (35) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (36) 36 | (36) 0.5 | (36) BU / BN | (36) 11326 | (36) II | (36) — | (36) Virtual Key Private CAN Bus [+] Serial Data | (36) 36 | (36) 0.5 | (36) BU / BN | (36) 11326 | (36) III | (36) — |
| 37 | — | — | — | — | — | Not Occupied | 37 | — | — | — | — | — |
| (38) 38 | (38) 0.35 | (38) WH / GY | (38) 4104 | (38) I | (38) — | (38) AUTOSAR CAN Bus [-] 8 Serial Data | (38) 38 | (38) 0.35 | (38) WH / GY | (38) 4104 | (38) III | (38) — |
| (39) 39 | (39) 0.35 | (39) BU / GY | (39) 4105 | (39) I | (39) — | (39) AUTOSAR CAN Bus [+] 8 Serial Data | (39) 39 | (39) 0.35 | (39) BU / GY | (39) 4105 | (39) III | (39) — |
| 40 - 43 | — | — | — | — | — | Not Occupied | 40 - 43 | — | — | — | — | — |
| (44) 44 | (44) 0.75 | (44) BK | (44) 150 | (44) II | (44) — | (44) Ground | (44) 44 | (44) 0.75 | (44) BK | (44) 150 | (44) III | (44) — |
| 45 - 53 | — | — | — | — | — | Not Occupied | 45 - 53 | — | — | — | — | — |
| (54) 54 | (54) 0.75 | (54) BK | (54) 250 | (54) II | (54) — | (54) Ground | (54) 54 | (54) 0.75 | (54) BK | (54) 250 | (54) III | (54) — |
| 55 | — | — | — | — | — | Not Occupied | 55 | — | — | — | — | — |

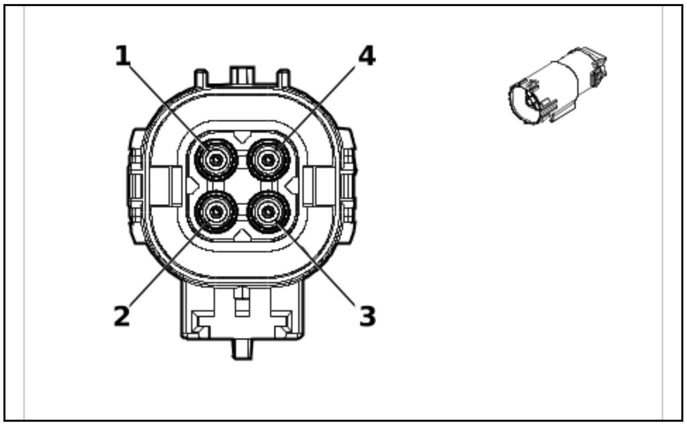
### X951 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness



6018776

**Connector Part Information**

- Harness Type: Front Object Alarm Sensor Wiring Harness COAX
- OEM Connector: AMZ14P-003-A
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way F Mini Coax Type( BK)



6020240

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 13558966
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 4-Way M Mini Coax Type( BK)

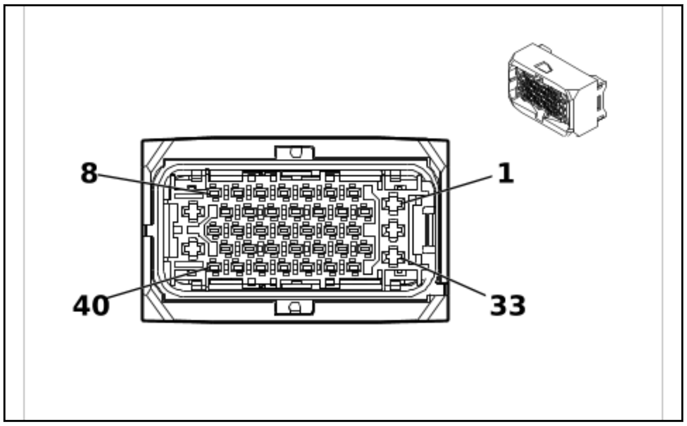
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

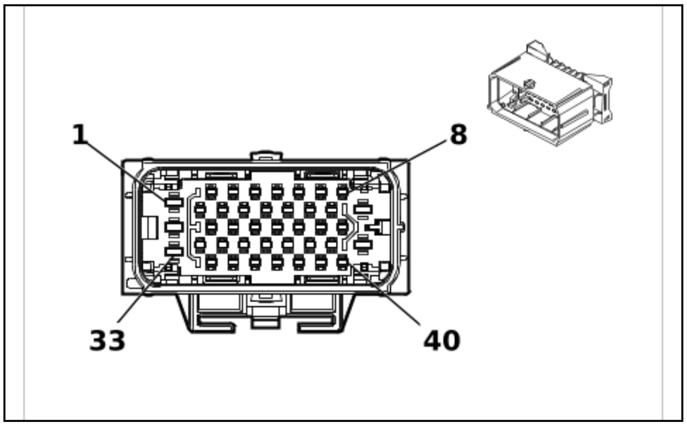
## X951 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 4 | — | — | — | — | — | Not Occupied | 1 - 4 | — | — | — | — | — |
| (1) 1 | (1) 0.4 | (1) Coax Cable | (1) 4722 | (1) I | (1) — | (1) Frontview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) 1 | (1) 0.4 | (1) Coax Cable | (1) 4722 | (1) II | (1) — |

### X953 Body Wiring Harness to Rear Object Alarm Sensor Wiring Harness



5517284



5782986

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 33367902
- Service Connector: 84952158
- Description: 40-Way F 1.5, 2.8 MCP Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Rear Object Alarm Sensor Wiring Harness
- OEM Connector: 33370237
- Service Connector: Service by Harness - See Part Catalog
- Description: 40-Way M 1.5, 2.8 MCP Series, Sealed( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 19368624 | J-35616-35 (VT) | J-38125-556 |
| II | 19369235 | J-35616-14 (GN) | EL-38125-560A |
| III | Not required | J-35616-3 (GY) | No Tool Required |
| IV | Not required | J-35616-5 (PU) | No Tool Required |

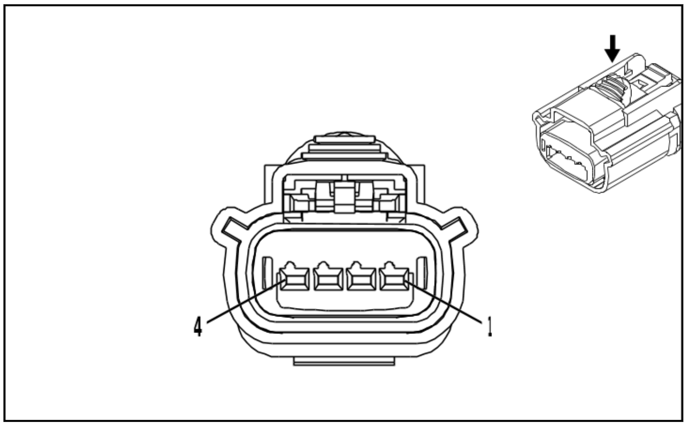
## X953 Body Wiring Harness to Rear Object Alarm Sensor Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 1 | (1) RD / BN | (1) 4940 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 1 | (1) RD / BN | (1) 4940 | (1) IV | (1) — |
| 2 | — | — | — | — | — | Not Occupied | 2 | — | — | — | — | — |
| (3) 3 | (3) 0.5 | (3) BN / WH | (3) 2374 | (3) II | (3) — | (3) Object Sensor Voltage Reference | (3) 3 | (3) 0.5 | (3) BN / WH | (3) 2374 | (3) III | (3) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | — | — | — | — | — | Not Occupied | 4 | — | — | — | — | — |
| (5) 5 | (5) 0.5 | (5) YE | (5) 2375 | (5) II | (5) — | (5) Left Rear Outer Parking Assist Sensor Signal | (5) 5 | (5) 0.5 | (5) YE | (5) 2375 | (5) III | (5) — |
| 6 - 8 | — | — | — | — | — | Not Occupied | 6 - 8 | — | — | — | — | — |
| (9) 9 | (9) 0.35 | (9) BU / GY | (9) 4105 | (9) II | (9) — | (9) AUTOSAR CAN Bus [+] 8 Serial Data | (9) 9 | (9) 0.5 | (9) BU / GY | (9) 4105 | (9) III | (9) — |
| (10) 10 | (10) 0.35 | (10) WH / GY | (10) 4104 | (10) II | (10) — | (10) AUTOSAR CAN Bus [-] 8 Serial Data | (10) 10 | (10) 0.5 | (10) WH / GY | (10) 4104 | (10) III | (10) — |
| 11 | — | — | — | — | — | Not Occupied | 11 | — | — | — | — | — |
| (12) 12 | (12) 0.5 | (12) WH / YE | (12) 11325 | (12) II | (12) — | (12) Virtual Key Private CAN Bus [-] Serial Data | (12) 12 | (12) 0.5 | (12) WH / YE | (12) 11325 | (12) III | (12) — |
| (13) 13 | (13) 0.5 | (13) BU / BN | (13) 11326 | (13) II | (13) — | (13) Virtual Key Private CAN Bus [+] Serial Data | (13) 13 | (13) 0.5 | (13) BU / BN | (13) 11326 | (13) III | (13) — |
| (14) 14 | (14) 0.5 | (14) WH / GY | (14) 4104 | (14) II | (14) — | (14) AUTOSAR CAN Bus [-] 8 Serial Data | (14) 14 | (14) 0.5 | (14) WH / GY | (14) 4104 | (14) III | (14) — |
| (15) 15 | (15) 0.5 | (15) BU / GY | (15) 4105 | (15) II | (15) — | (15) AUTOSAR CAN Bus [+] 8 Serial Data | (15) 15 | (15) 0.5 | (15) BU / GY | (15) 4105 | (15) III | (15) — |
| 16 | — | — | — | — | — | Not Occupied | 16 | — | — | — | — | — |
| (17) 17 | (17) 0.5 | (17) RD / GY | (17) 4840 | (17) I | (17) — | (17) Battery Positive Voltage | (17) 17 | (17) 0.5 | (17) RD / GY | (17) 4840 | (17) IV | (17) — |
| 18 - 22 | — | — | — | — | — | Not Occupied | 18 - 22 | — | — | — | — | — |
| (23) 23 | (23) 0.35 | (23) BN / GN | (23) 3568 | (23) II | (23) — | (23) Rear Closure Passive Entry Antenna High Signal | (23) 23 | (23) 0.5 | (23) BN / GN | (23) 3568 | (23) III | (23) — |
| (24) 24 | (24) 0.35 | (24) GN / GY | (24) 3569 | (24) II | (24) — | (24) Rear Closure Passive Entry Antenna Low Signal | (24) 24 | (24) 0.5 | (24) GN / GY | (24) 3569 | (24) III | (24) — |
| (25) 25 | (25) 0.5 | (25) YE / BU | (25) 2376 | (25) II | (25) — | (25) Left Rear Middle Parking Assist Sensor Signal | (25) 25 | (25) 0.5 | (25) YE / BU | (25) 2376 | (25) III | (25) — |
| (26) 26 | (26) 0.5 | (26) BK / GY | (26) 2379 | (26) II | (26) — | (26) Object Sensor Low Reference | (26) 26 | (26) 0.5 | (26) BK / GY | (26) 2379 | (26) III | (26) — |

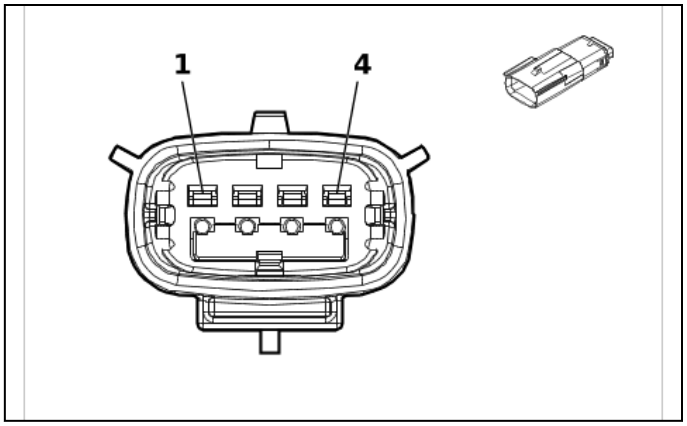
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (27) 27 | (27) 0.5 | (27) BU | (27) 3157 | (27) II | (27) — | (27) Right Rear Advanced Parking Assist Side Object Sensor Signal | (27) 27 | (27) 0.5 | (27) BU | (27) 3157 | (27) III | (27) — |
| 28 - 31 | — | — | — | — | — | Not Occupied | 28 - 31 | — | — | — | — | — |
| (32) 32 | (32) 0.5 | (32) BK | (32) 1450 | (32) I | (32) — | (32) Ground | (32) 32 | (32) 0.5 | (32) BK | (32) 1450 | (32) IV | (32) — |
| 33 | — | — | — | — | — | Not Occupied | 33 | — | — | — | — | — |
| (34) 34 | (34) 0.5 | (34) YE / WH | (34) 2377 | (34) II | (34) — | (34) Right Rear Middle Parking Assist Sensor Signal | (34) 34 | (34) 0.5 | (34) YE / WH | (34) 2377 | (34) III | (34) — |
| (35) 35 | (35) 0.5 | (35) GN | (35) 3156 | (35) II | (35) — | (35) Left Rear Advanced Parking Assist Side Object Sensor Signal | (35) 35 | (35) 0.5 | (35) GN | (35) 3156 | (35) III | (35) — |
| (36) 36 | (36) 0.35 | (36) GN / YE | (36) 2862 | (36) II | (36) — | (36) Body Control Module LIN Bus 16 | (36) 36 | (36) 0.5 | (36) GN / YE | (36) 2862 | (36) III | (36) — |
| (37) 37 | (37) 0.5 | (37) YE / VT | (37) 2378 | (37) II | (37) — | (37) Right Rear Outer Parking Assist Sensor Signal | (37) 37 | (37) 0.5 | (37) YE / VT | (37) 2378 | (37) III | (37) — |
| 38 - 40 | — | — | — | — | — | Not Occupied | 38 - 40 | — | — | — | — | — |

## X954 Body Wiring Harness to Forward Range Radar Sensor Wiring Harness



4455251

**Connector Part Information**
- Harness Type: Body Wiring Harness
- OEM Connector: 15514524
- Service Connector: 19355605
- Description: 4-Way F 1.5 OCS Series, Sealed( BK)



6824000

**Connector Part Information**
- Harness Type: Forward Range Radar Sensor Wiring Harness
- OEM Connector: 15514500
- Service Connector: Service by Harness - See Part Catalog
- Description: 4-Way M 1.5 OCS Series, Sealed( BK)

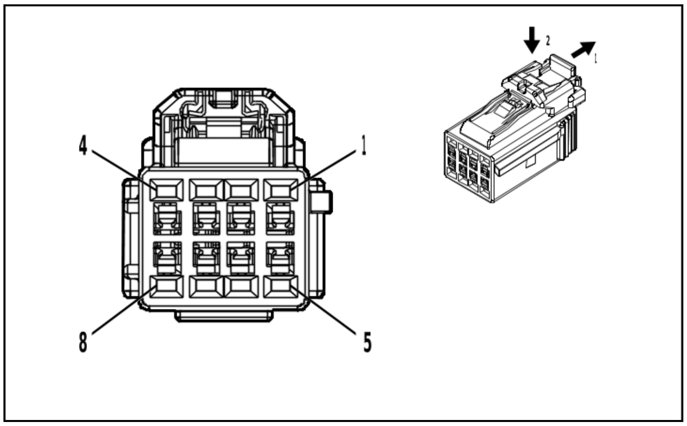
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

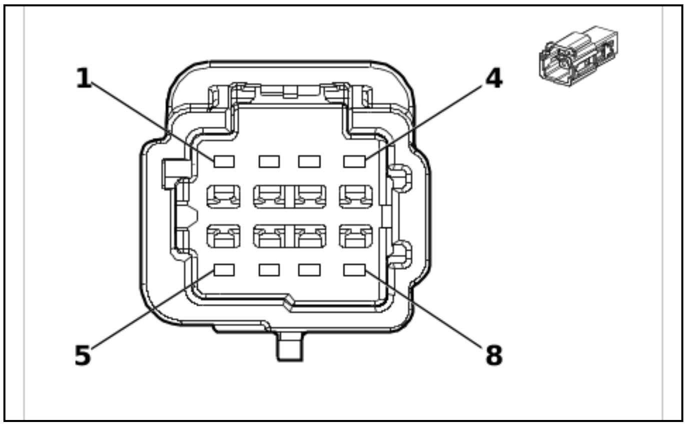
## X954 Body Wiring Harness to Forward Range Radar Sensor Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GN | (1) 3140 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / GN | (1) 3140 | (1) II | (1) — |
| (2) 2 | (2) 0.35 | (2) WH / GY | (2) 4104 | (2) I | (2) — | (2) AUTOSAR CAN Bus [-] 8 Serial Data | (2) 2 | (2) 0.35 | (2) WH / GY | (2) 4104 | (2) II | (2) — |
| (3) 3 | (3) 0.35 | (3) BU / GY | (3) 4105 | (3) I | (3) — | (3) AUTOSAR CAN Bus [+] 8 Serial Data | (3) 3 | (3) 0.35 | (3) BU / GY | (3) 4105 | (3) II | (3) — |
| (4) 4 | (4) 0.75<br>(4) 0.5 | (4) BK / WH<br>(4) BK / WH | (4) 251<br>(4) 251 | (4) I<br>(4) I | (4) - UKL<br>(4) UKL | (4) Signal Ground<br>(4) Signal Ground | (4) 4 | (4) 0.5 | (4) BK / WH | (4) 251 | (4) II | (4) — |

### X960 Roof Wiring Harness to Body Wiring Harness



5086387



5751475

**Connector Part Information**

- Harness Type: Roof Wiring Harness
- OEM Connector: 6098-8443
- Service Connector: 84613126
- Description: 8-Way F 1.2 Series( BK)

**Connector Part Information**

- Harness Type: Body Wiring Harness
- OEM Connector: 6098-9129
- Service Connector: 86828134
- Description: 8-Way M 1.2 MBS Series( BK)

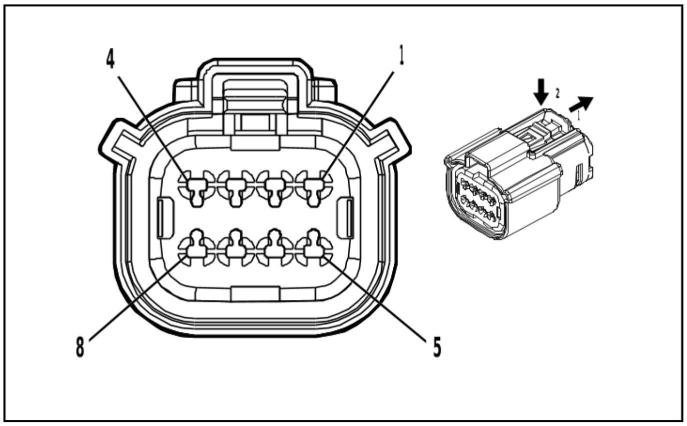
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-12 (BU) | No Tool Required |
| II | Not required | J-35616-16 (L-GN) | No Tool Required |
| III | Not required | J-35616-13 (BU) | No Tool Required |
| IV | Not required | J-35616-17 (L-GN) | No Tool Required |

## X960 Roof Wiring Harness to Body Wiring Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) RD / GY | (1) 4840 | (1) II | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 0.5 | (1) RD / GY | (1) 4840 | (1) IV | (1) — |
| (2) 2 | (2) 0.5 | (2) WH / YE | (2) 11325 | (2) II | (2) — | (2) Virtual Key Private CAN Bus [-] Serial Data | (2) 2 | (2) 0.5 | (2) WH / YE | (2) 11325 | (2) IV | (2) — |
| (3) 3 | (3) 0.5 | (3) BU / BN | (3) 11326 | (3) II | (3) — | (3) Virtual Key Private CAN Bus [+] Serial Data | (3) 3 | (3) 0.5 | (3) BU / BN | (3) 11326 | (3) IV | (3) — |
| (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) II | (4) — | (4) Virtual Key Private CAN Bus [+] Serial Data | (4) 4 | (4) 0.5 | (4) BU / BN | (4) 11326 | (4) IV | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) II | (5) — | (5) Virtual Key Private CAN Bus [-] Serial Data | (5) 5 | (5) 0.5 | (5) WH / YE | (5) 11325 | (5) IV | (5) — |
| (6) 6 | (6) 0.5 | (6) BK | (6) 1450 | (6) II | (6) — | (6) Ground | (6) 6 | (6) 0.5 | (6) BK | (6) 2050 | (6) IV | (6) — |
| (7) 7 | (7) 0.35 | (7) GN / GY | (7) 737 | (7) I | (7) — | (7) Rear Compartment Courtesy Lamp Control | (7) 7 | (7) 0.35 | (7) GN / GY | (7) 737 | (7) III | (7) — |
| (8) 8 | (8) 0.35 | (8) BK | (8) 2050 | (8) I | (8) — | (8) Ground | (8) 8 | (8) 0.5 | (8) BK | (8) 2050 | (8) IV | (8) — |

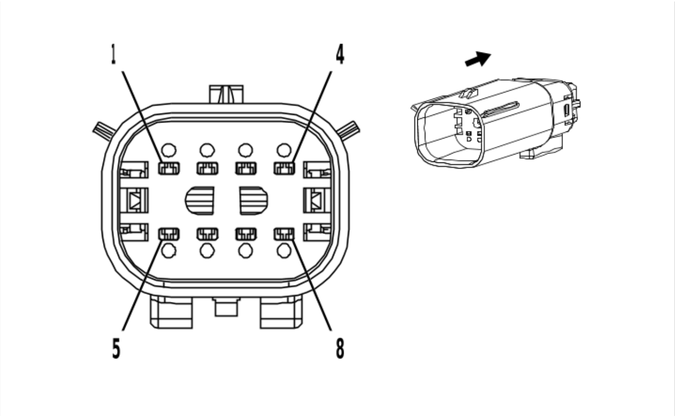
### X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness



4846407

**Connector Part Information**

- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-4806
- Service Connector: 84928314
- Description: 8-Way F 1.5 MX Series, Sealed( BK)



2667653

**Connector Part Information**

- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 33482-4801
- Service Connector: Service by Harness - See Part Catalog
- Description: 8-Way M 1.5 MX Series, Sealed( BK)

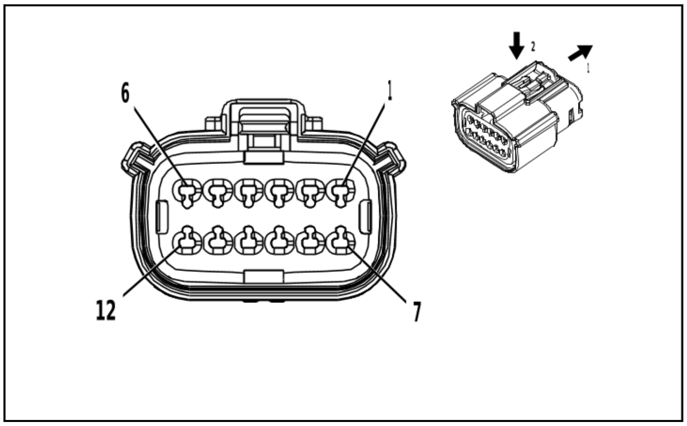
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-14 (GN) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

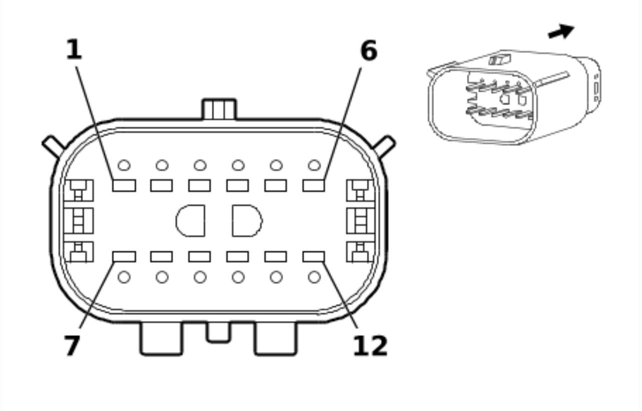
## X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / GN | (1) 2492 | (1) I | (1) — | (1) Cylinder Shutoff Solenoid Enable Signal 2 | (1) 1 | (1) 0.5 | (1) WH / GN | (1) 2492 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 5492 | (2) I | (2) — | (2) Cylinder Deactivation Solenoid Valve Control 2 | (2) 2 | (2) 0.5 | (2) GN | (2) 5492 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / GY | (3) 2493 | (3) I | (3) — | (3) Cylinder Shutoff Solenoid Enable Signal 3 | (3) 3 | (3) 0.5 | (3) YE / GY | (3) 2493 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GY | (4) 5493 | (4) I | (4) — | (4) Cylinder Deactivation Solenoid Valve Control 3 | (4) 4 | (4) 0.5 | (4) GY | (4) 5493 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / VT | (5) 2495 | (5) I | (5) — | (5) Cylinder Shutoff Solenoid Enable Signal 5 | (5) 5 | (5) 0.5 | (5) WH / VT | (5) 2495 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) VT | (6) 5495 | (6) I | (6) — | (6) Cylinder Deactivation Solenoid Valve Control 5 | (6) 6 | (6) 0.5 | (6) VT | (6) 5495 | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / YE | (7) 2498 | (7) I | (7) — | (7) Cylinder Shutoff Solenoid Enable Signal 8 | (7) 7 | (7) 0.5 | (7) WH / YE | (7) 2498 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 5498 | (8) I | (8) — | (8) Cylinder Deactivation Solenoid Valve Control 8 | (8) 8 | (8) 0.5 | (8) YE | (8) 5498 | (8) II | (8) — |

## X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness



2871860



1825167

**Connector Part Information**
- Harness Type: Engine Wiring Harness
- OEM Connector: 33472-1266
- Service Connector: 19352907
- Description: 12-Way F 1.5 MX Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 33482-6260
- Service Connector: Service by Harness - See Part Catalog
- Description: 12-Way M 1.5 MX Series, Sealed( BK)

## Terminal Part Information

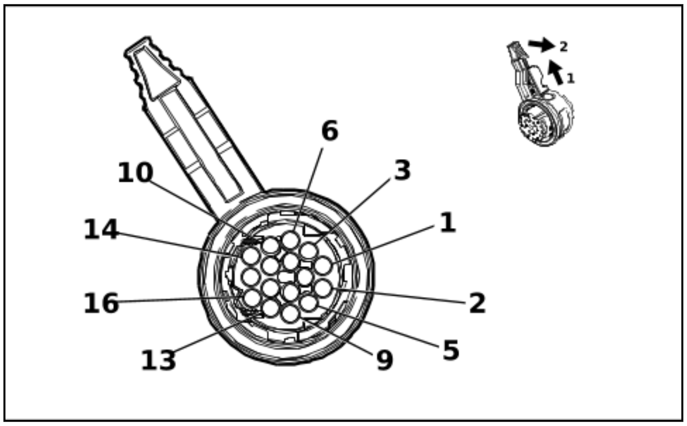
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 85528055 | J-35616-2A (GY) | J-38125-217 |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness

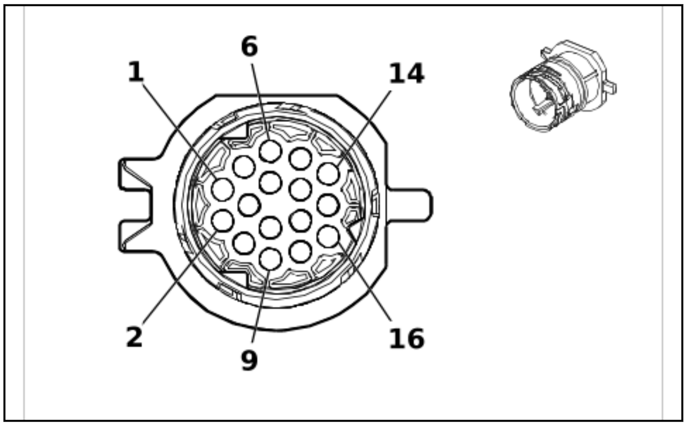
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / BU | (1) 2491 | (1) I | (1) — | (1) Cylinder Shutoff Solenoid Enable Signal 1 | (1) 1 | (1) 0.5 | (1) WH / BU | (1) 2491 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) BU | (2) 5491 | (2) I | (2) — | (2) Cylinder Deactivation Solenoid Valve Control 1 | (2) 2 | (2) 0.5 | (2) BU | (2) 5491 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / GN | (3) 2494 | (3) I | (3) — | (3) Cylinder Shutoff Solenoid Enable Signal 4 | (3) 3 | (3) 0.5 | (3) YE / GN | (3) 2494 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) YE / BU | (4) 5494 | (4) I | (4) — | (4) Cylinder Deactivation Solenoid Valve Control 4 | (4) 4 | (4) 0.5 | (4) YE / BU | (4) 5494 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) YE / BN | (5) 2496 | (5) I | (5) — | (5) Cylinder Shutoff Solenoid Enable Signal 6 | (5) 5 | (5) 0.5 | (5) YE / BN | (5) 2496 | (5) II | (5) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) 6 | (6) 0.5 | (6) BN | (6) 5496 | (6) I | (6) — | (6) Cylinder Deactivation Solenoid Valve Control 6 | (6) 6 | (6) 0.5 | (6) BN | (6) 5496 | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) GN / GY | (7) 2497 | (7) I | (7) — | (7) Cylinder Shutoff Solenoid Enable Signal 7 | (7) 7 | (7) 0.5 | (7) GN / GY | (7) 2497 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) WH | (8) 5497 | (8) I | (8) — | (8) Cylinder Deactivation Solenoid Valve Control 7 | (8) 8 | (8) 0.5 | (8) WH | (8) 5497 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) BU | (9) 410 | (9) I | (9) — | (9) Engine Coolant Temperature Sensor Signal | (9) 9 | (9) 0.5 | (9) BU | (9) 410 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) BK / YE | (10) 548 | (10) I | (10) — | (10) Engine Control Sensors Low Reference 1 | (10) 10 | (10) 0.5 | (10) BK / YE | (10) 548 | (10) II | (10) — |
| 11 - 12 | — | — | — | — | — | Not Occupied | 11 - 12 | — | — | — | — | — |

### X963 Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness



5573634



5575849

**Connector Part Information**
- Harness Type: Valve Rocker Arm Oil Control Valve Extension Harness
- OEM Connector: 10534553
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way F 1.5 RK Series, Sealed( BK)

**Connector Part Information**
- Harness Type: Valve Rocker Arm Oil Control Valve Harness
- OEM Connector: 10140573
- Service Connector: Service by Harness - See Part Catalog
- Description: 16-Way M 1.5 RK Series, Sealed( BK)

## Terminal Part Information

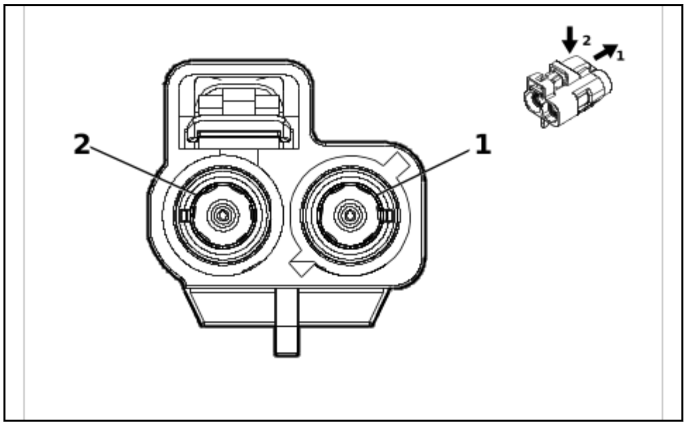
| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | J-35616-2A (GY) | No Tool Required |
| II | Not required | J-35616-3 (GY) | No Tool Required |

## X963 Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 0.5 | (1) WH / GN | (1) 2492 | (1) I | (1) — | (1) Cylinder Shutoff Solenoid Enable Signal 2 | (1) 1 | (1) 0.5 | (1) WH / GN | (1) 2492 | (1) II | (1) — |
| (2) 2 | (2) 0.5 | (2) GN | (2) 5492 | (2) I | (2) — | (2) Cylinder Deactivation Solenoid Valve Control 2 | (2) 2 | (2) 0.5 | (2) GN | (2) 5492 | (2) II | (2) — |
| (3) 3 | (3) 0.5 | (3) YE / GY | (3) 2493 | (3) I | (3) — | (3) Cylinder Shutoff Solenoid Enable Signal 3 | (3) 3 | (3) 0.5 | (3) YE / GY | (3) 2493 | (3) II | (3) — |
| (4) 4 | (4) 0.5 | (4) GY | (4) 5493 | (4) I | (4) — | (4) Cylinder Deactivation Solenoid Valve Control 3 | (4) 4 | (4) 0.5 | (4) GY | (4) 5493 | (4) II | (4) — |
| (5) 5 | (5) 0.5 | (5) WH / VT | (5) 2495 | (5) I | (5) — | (5) Cylinder Shutoff Solenoid Enable Signal 5 | (5) 5 | (5) 0.5 | (5) WH / VT | (5) 2495 | (5) II | (5) — |
| (6) 6 | (6) 0.5 | (6) VT | (6) 5495 | (6) I | (6) — | (6) Cylinder Deactivation Solenoid Valve Control 5 | (6) 6 | (6) 0.5 | (6) VT | (6) 5495 | (6) II | (6) — |
| (7) 7 | (7) 0.5 | (7) WH / YE | (7) 2498 | (7) I | (7) — | (7) Cylinder Shutoff Solenoid Enable Signal 8 | (7) 7 | (7) 0.5 | (7) WH / YE | (7) 2498 | (7) II | (7) — |
| (8) 8 | (8) 0.5 | (8) YE | (8) 5498 | (8) I | (8) — | (8) Cylinder Deactivation Solenoid Valve Control 8 | (8) 8 | (8) 0.5 | (8) YE | (8) 5498 | (8) II | (8) — |
| (9) 9 | (9) 0.5 | (9) WH / BU | (9) 2491 | (9) I | (9) — | (9) Cylinder Shutoff Solenoid Enable Signal 1 | (9) 9 | (9) 0.5 | (9) WH / BU | (9) 2491 | (9) II | (9) — |
| (10) 10 | (10) 0.5 | (10) BU | (10) 5491 | (10) I | (10) — | (10) Cylinder Deactivation Solenoid Valve Control 1 | (10) 10 | (10) 0.5 | (10) BU | (10) 5491 | (10) II | (10) — |
| (11) 11 | (11) 0.5 | (11) YE / GN | (11) 2494 | (11) I | (11) — | (11) Cylinder Shutoff Solenoid Enable Signal 4 | (11) 11 | (11) 0.5 | (11) YE / GN | (11) 2494 | (11) II | (11) — |
| (12) 12 | (12) 0.5 | (12) YE / BU | (12) 5494 | (12) I | (12) — | (12) Cylinder Deactivation Solenoid Valve Control 4 | (12) 12 | (12) 0.5 | (12) YE / BU | (12) 5494 | (12) II | (12) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (13) 13 | (13) 0.5 | (13) Y E / BN | (13) 24 96 | (13) I | (13) — | (13) Cylinder Shutoff Solenoid Enable Signal 6 | (13) 13 | (13) 0.5 | (13) Y E / BN | (13) 24 96 | (13) II | (13) — |
| (14) 14 | (14) 0.5 | (14) B N | (14) 54 96 | (14) I | (14) — | (14) Cylinder Deactivation Solenoid Valve Control 6 | (14) 14 | (14) 0.5 | (14) B N | (14) 54 96 | (14) II | (14) — |
| (15) 15 | (15) 0.5 | (15) G N / GY | (15) 24 97 | (15) I | (15) — | (15) Cylinder Shutoff Solenoid Enable Signal 7 | (15) 15 | (15) 0.5 | (15) G N / GY | (15) 24 97 | (15) II | (15) — |
| (16) 16 | (16) 0.5 | (16) WH | (16) 54 97 | (16) I | (16) — | (16) Cylinder Deactivation Solenoid Valve Control 7 | (16) 16 | (16) 0.5 | (16) WH | (16) 54 97 | (16) II | (16) — |

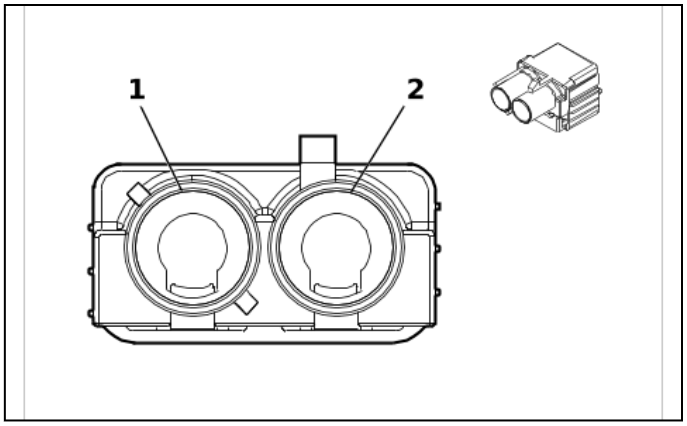
### X995D Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness



5911320

**Connector Part Information**

- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable COAX
- OEM Connector: 13545991
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way F Coax Type( BU)



5873713

**Connector Part Information**

- Harness Type: Rear License Plate Lamp Wiring Harness COAX
- OEM Connector: 33351073
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 2-Way M Coax Type( BU)

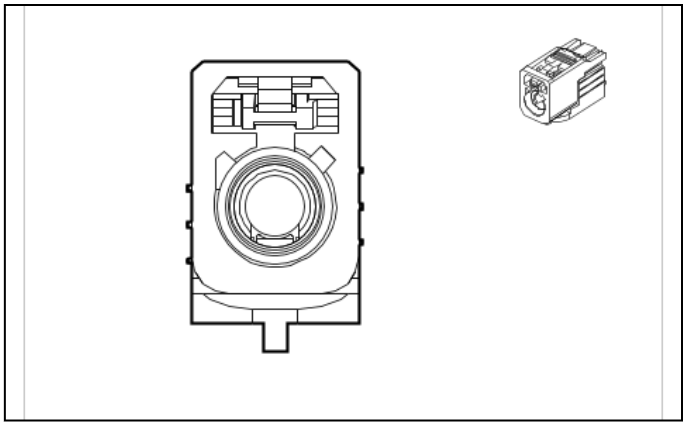
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X995D Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness

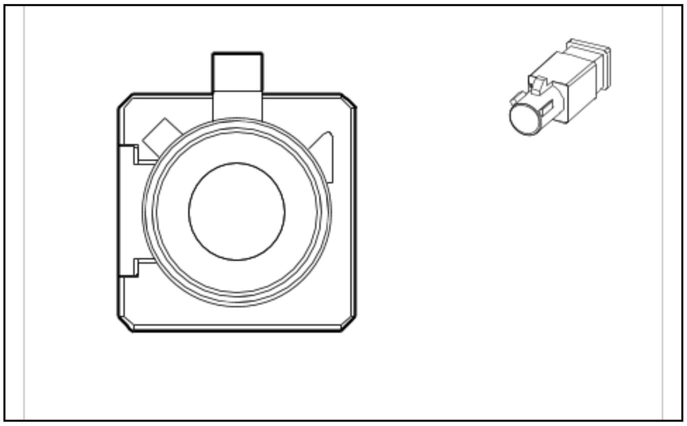
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 - 2 | — | — | — | — | — | Not Occupied | 1 - 2 | — | — | — | — | — |
| (1) 1 | (1) 0 | (1) Coax Cable | (1) 4721 | (1) I | (1) — | (1) Rearview Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (1) 1 | (1) 0.4 | (1) Coax Cable | (1) 4721 | (1) II | (1) — |
| (2) 2 | (2) 0 | (2) Coax Cable | (2) 2387 | (2) I | (2) — | (2) Full Display Mirror Rear Camera LVDS (Low Voltage Differential Signaling) Coaxial Signal | (2) 2 | (2) 0.4 | (2) Coax Cable | (2) 2387 | (2) II | (2) — |

## X995R Body Wiring Harness to Rearview Driver Information Camera Rear Closure Coaxial Cable


5633890

**Connector Part Information**

- Harness Type: Body Wiring Harness COAX
- OEM Connector: 33351011
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( WH)


6122705

**Connector Part Information**

- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable COAX
- OEM Connector: 13532504
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( WH)

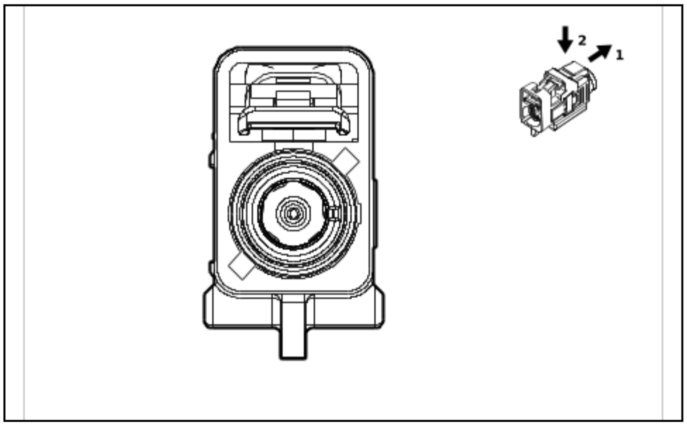
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X995R Body Wiring Harness to Rearview Driver Information Camera Rear Closure Coaxial Cable

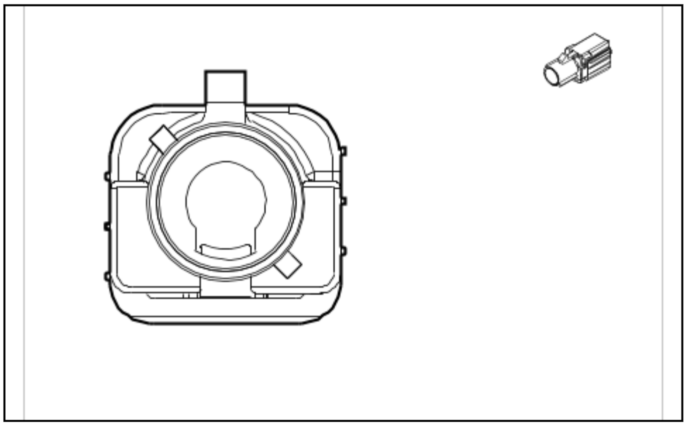
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X995S Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness



6686775

**Connector Part Information**
- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable COAX
- OEM Connector: 13545977
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BU)



5873701

**Connector Part Information**
- Harness Type: Rear License Plate Lamp Wiring Harness COAX
- OEM Connector: 33351038
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BU)

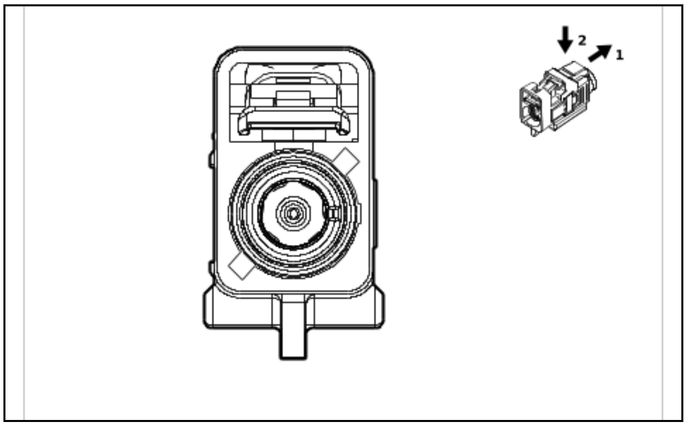
## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

## X995S Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness

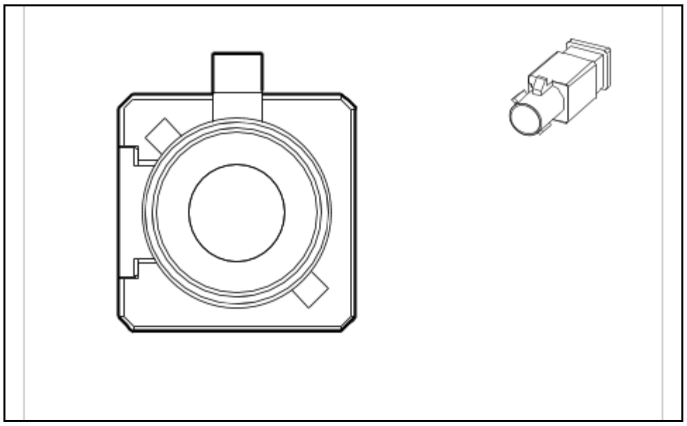
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Rear Vision Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

## X996 Antenna Coaxial Cable to Rearview Driver Information Camera Rear Closure Coaxial Cable



6686775

**Connector Part Information**
- Harness Type: Antenna Coaxial Cable COAX
- OEM Connector: 13545977
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way F Coax Type( BU)



6122706

**Connector Part Information**
- Harness Type: Rearview Driver Information Camera Rear Closure Coaxial Cable COAX
- OEM Connector: 13532505
- Service Connector: Service by Cable Assembly — See Part Catalog
- Description: 1-Way M Coax Type( BU)

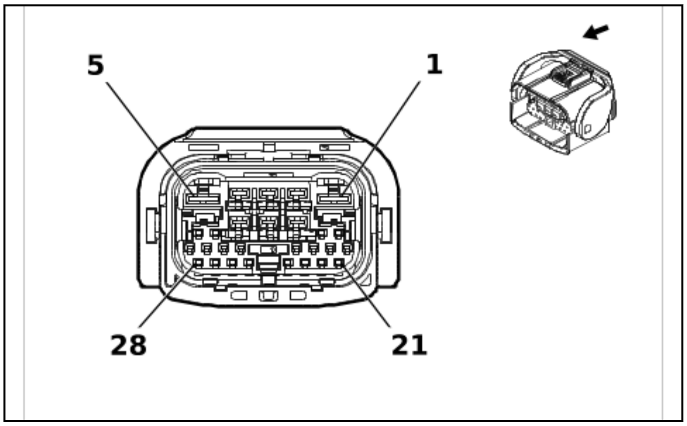
### Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | Not required | No Tool Required | No Tool Required |

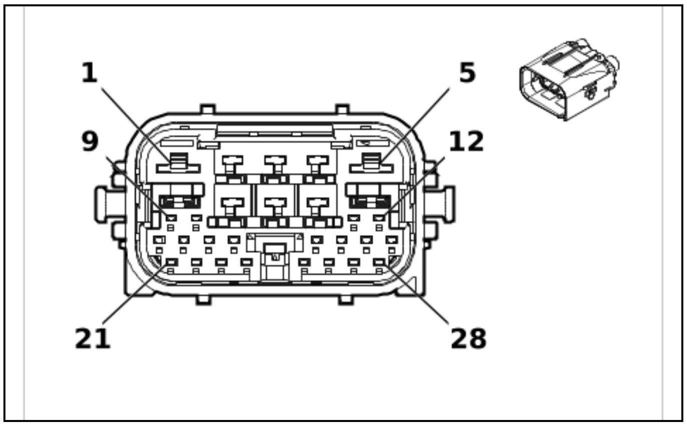
### X996 Antenna Coaxial Cable to Rearview Driver Information Camera Rear Closure Coaxial Cable

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| — | — | Coax Cable | — | I | — | Full Display Mirror Rear Camera Coaxial Video Signal | — | — | Coax Cable | — | I | — |

### X999 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (LZ0)



6572042



6757546

**Connector Part Information**

- Harness Type: Chassis Wiring Harness
- OEM Connector: 13550300
- Service Connector: 85761013
- Description: 28-Way F 1.2 MLK, 2.8, 6.3 YESC Series( BK)

**Connector Part Information**

- Harness Type: Emission Reduction Fluid Tank Reservoir Wire Harness
- OEM Connector: 13550301
- Service Connector: Service by Harness - See Part Catalog
- Description: 28-Way M 1.2 MLK, 2.8, 6.3 YESC Series( BK)

## Terminal Part Information

| Terminal Type ID | Terminated Lead | Diagnostic Test Probe | Terminal Removal Tool |
|---|---|---|---|
| I | 13575383 | J-35616-42 (RD) | J-38125-11A |
| II | 19368324 | J-35616-35 (VT) | J-38125-11A |
| III | 85669160 | J-35616-12 (BU) | J-38125-215A |
| IV | Not required | J-35616-14 (GN) | No Tool Required |
| V | Not required | J-35616-4A (PU) | No Tool Required |
| VI | Not required | No Tool Required | No Tool Required |

## X999 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (LZ0)

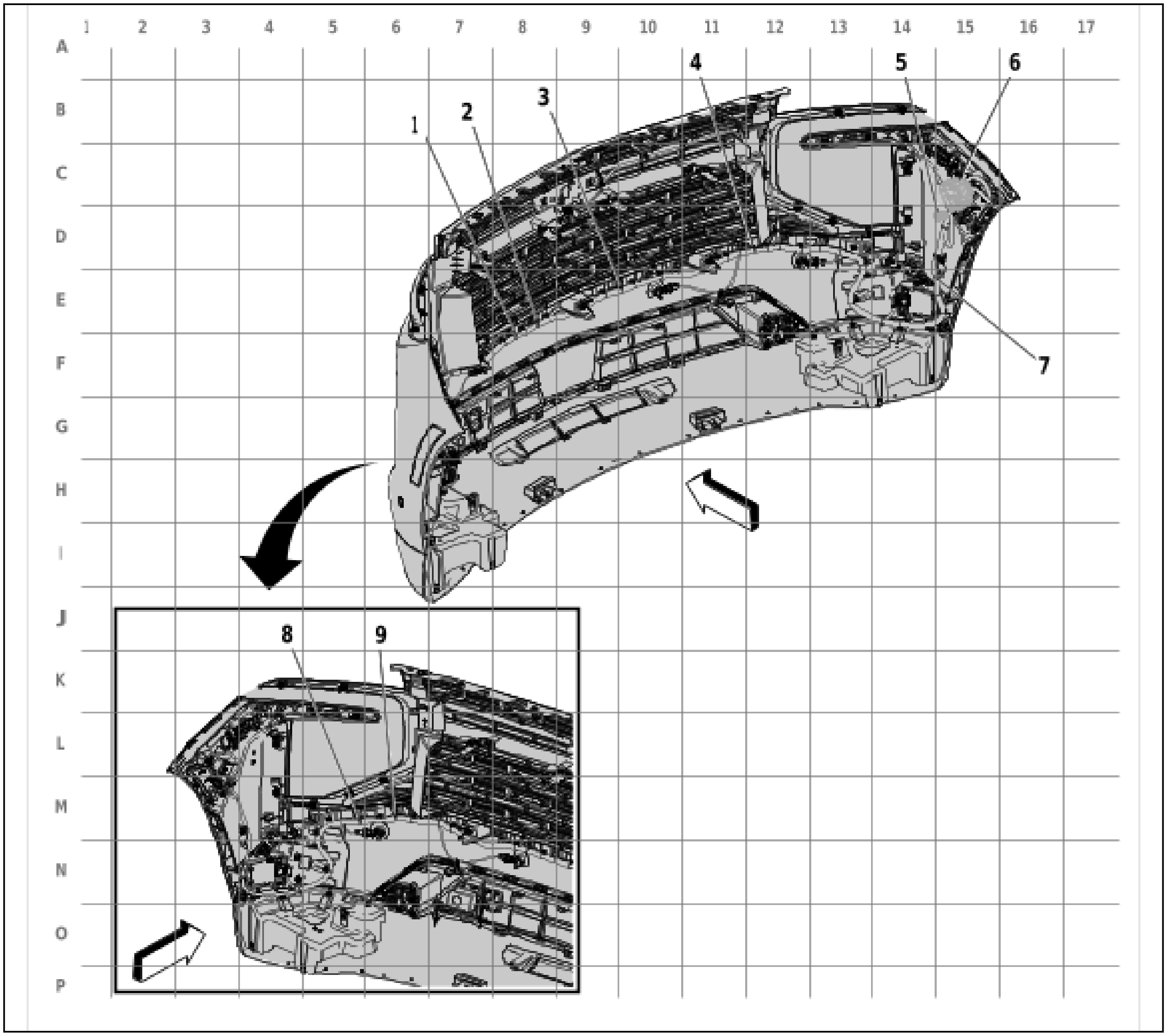
| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) 1 | (1) 2.5 | (1) RD / WH | (1) 3440 | (1) I | (1) — | (1) Battery Positive Voltage | (1) 1 | (1) 3 | (1) BK | (1) 3440 | (1) VI | (1) — |
| 2 - 4 | — | — | — | — | — | Not Occupied | 2 - 4 | — | — | — | — | — |
| (5) 5 | (5) 3 | (5) BK | (5) 1650 | (5) I | (5) — | (5) Ground | (5) 5 | (5) 3 | (5) WH | (5) 1650 | (5) VI | (5) — |
| 6 | — | — | — | — | — | Not Occupied | 6 | — | — | — | — | — |
| (7) 7 | (7) 0.5 | (7) RD / WH | (7) 2040 | (7) II | (7) — | (7) Battery Positive Voltage | (7) 7 | (7) 2 | (7) RD | (7) 2040 | (7) V | (7) — |
| 8 - 14 | — | — | — | — | — | Not Occupied | 8 - 14 | — | — | — | — | — |
| (15) 15 | (15) 0.5 | (15) VT / BK | (15) 2139 | (15) III | (15) — | (15) Run/ Crank Ignition 1 Voltage | (15) 15 | (15) 0.5 | (15) BN | (15) 2139 | (15) IV | (15) — |

| Pin | Size | Color | Circuit | Terminal Type ID | Option | Function | Pin | Size | Color | Circuit | Terminal Type ID | Option |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (16) 16 | (16) 0.5 | (16) BU | (16) 4987 | (16) III | (16) — | (16) AUTOSAR CAN Bus [+] 1 Serial Data | (16) 16 | (16) 0.5 | (16) BU | (16) 4987 | (16) IV | (16) — |
| (17) 17 | (17) 0.5 | (17) BU / GN | (17) 4987 | (17) III | (17) — | (17) AUTOSAR CAN Bus [+] 1 Serial Data | (17) 17 | (17) 0.5 | (17) BU | (17) 4987 | (17) IV | (17) — |
| 18 - 23 | — | — | — | — | — | Not Occupied | 18 - 23 | — | — | — | — | — |
| (24) 24 | (24) 0.5 | (24) WH | (24) 4986 | (24) III | (24) — | (24) AUTOSAR CAN Bus [-] 1 Serial Data | (24) 24 | (24) 0.5 | (24) BN | (24) 4986 | (24) IV | (24) — |
| (25) 25 | (25) 0.5 | (25) WH / BU | (25) 4986 | (25) III | (25) — | (25) AUTOSAR CAN Bus [-] 1 Serial Data | (25) 25 | (25) 0.5 | (25) BN | (25) 4986 | (25) IV | (25) — |
| 26 - 28 | — | — | — | — | — | Not Occupied | 26 - 28 | — | — | — | — | — |

# Electrical Component Locator and Harness Routing Views

## Schematic and Routing Diagrams

### Front Object Alarm Sensor Wiring Harness Routing (UKL)

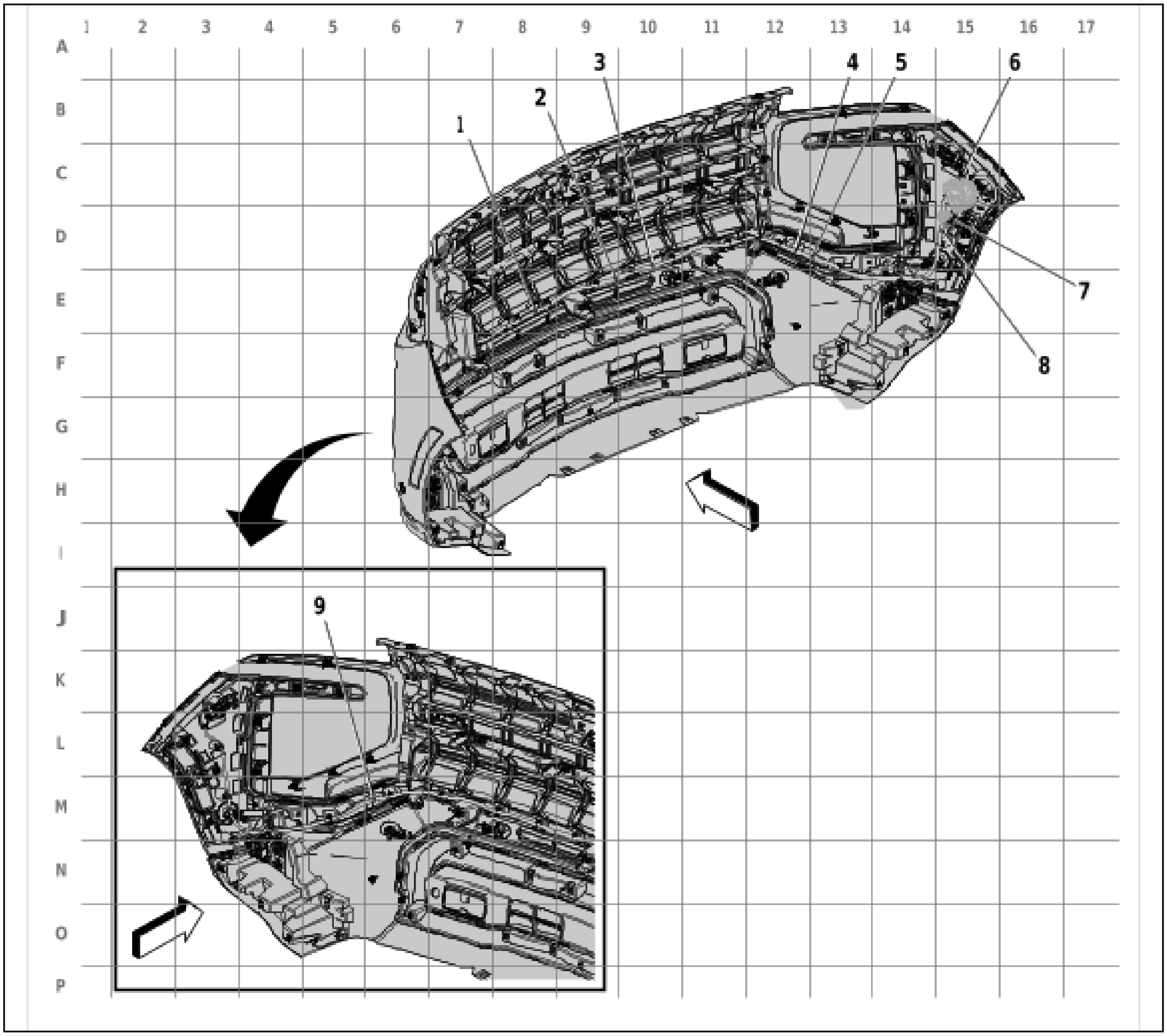


6666257

| Items |
|---|
| (1) J133 Front Object Alarm Sensor Wiring Harness |
| (2) J108 Front Object Alarm Sensor Wiring Harness (T40) |
| (3) J141 Front Object Alarm Sensor Wiring Harness |
| (4) J105 Front Object Alarm Sensor Wiring Harness (T40) |
| (5) X951 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness |
| (6) X950 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness |
| (7) J178 Front Object Alarm Sensor Wiring Harness (T40) |

| Items |
|---|
| (8) J102 Front Object Alarm Sensor Wiring Harness |
| (9) J103 Front Object Alarm Sensor Wiring Harness (UKZ) |

### Front Object Alarm Sensor Wiring Harness Routing (- UKL)

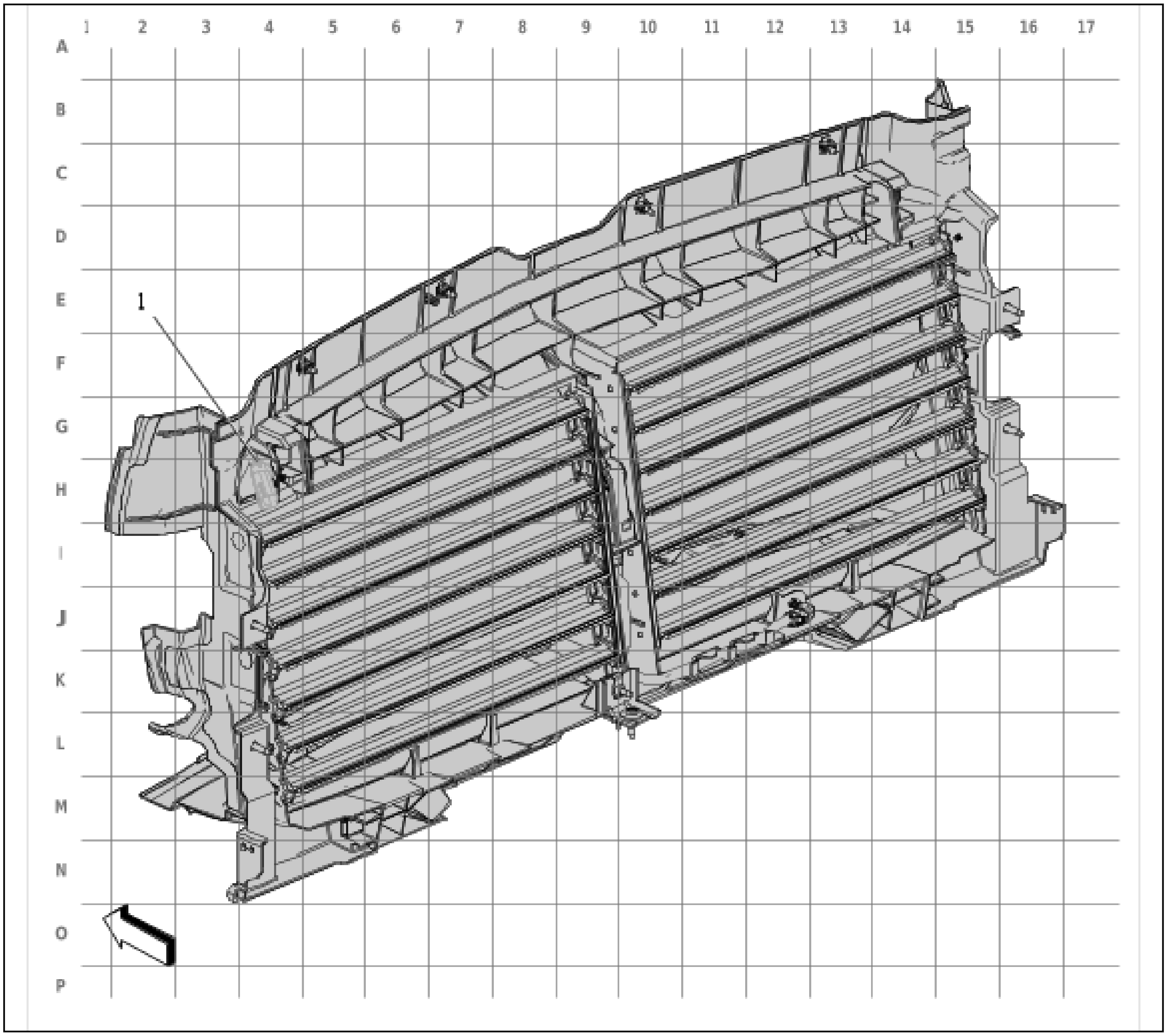


6666258

| Items |
|---|
| (1) J102 Front Object Alarm Sensor Wiring Harness |
| (2) J105 Front Object Alarm Sensor Wiring Harness (T40) |
| (3) J141 Front Object Alarm Sensor Wiring Harness |
| (4) J133 Front Object Alarm Sensor Wiring Harness |
| (5) J108 Front Object Alarm Sensor Wiring Harness (T40) |
| (6) X950 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness |
| (7) X951 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness |

| Items |
|---|
| (8) J178 Front Object Alarm Sensor Wiring Harness (T40) |
| (9) J103 Front Object Alarm Sensor Wiring Harness (UKZ) |

## Active Grille Air Shutter Harness Routing (VTI)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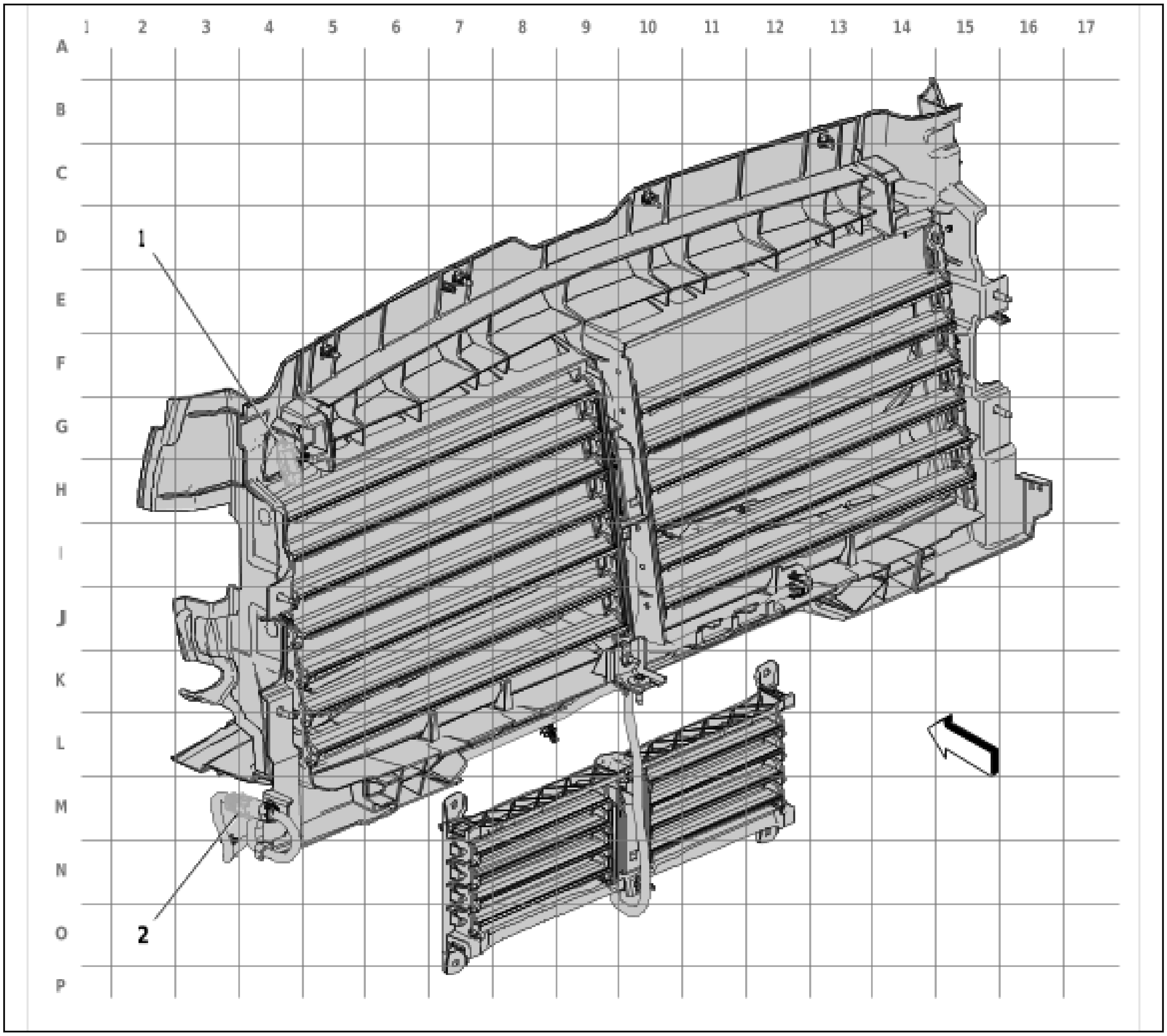
6691848

| Items |
|---|
| (1) X604A Engine Harness to Active Grille Air Shutter Harness |

## Active Grille Air Shutter Harness Routing (WMI)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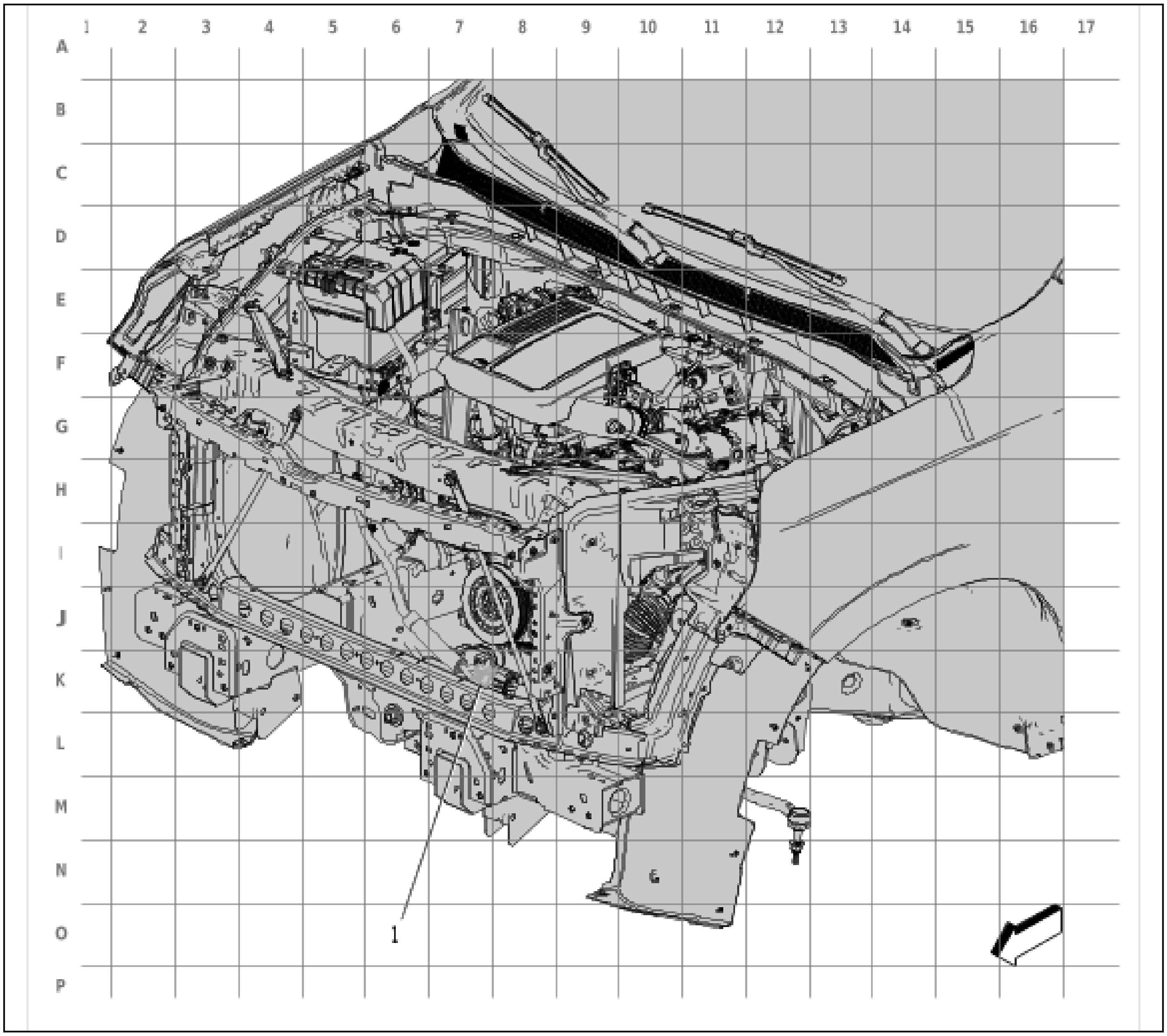
6691849

| Items |
|---|
| (1) X604A Engine Harness to Active Grille Air Shutter Harness |
| (2) X604B Aeroshutter Extension Wiring Harness to Aeroshutter Jumper Wiring Harness (WMI) |

### Power Steering Wiring Harness Routing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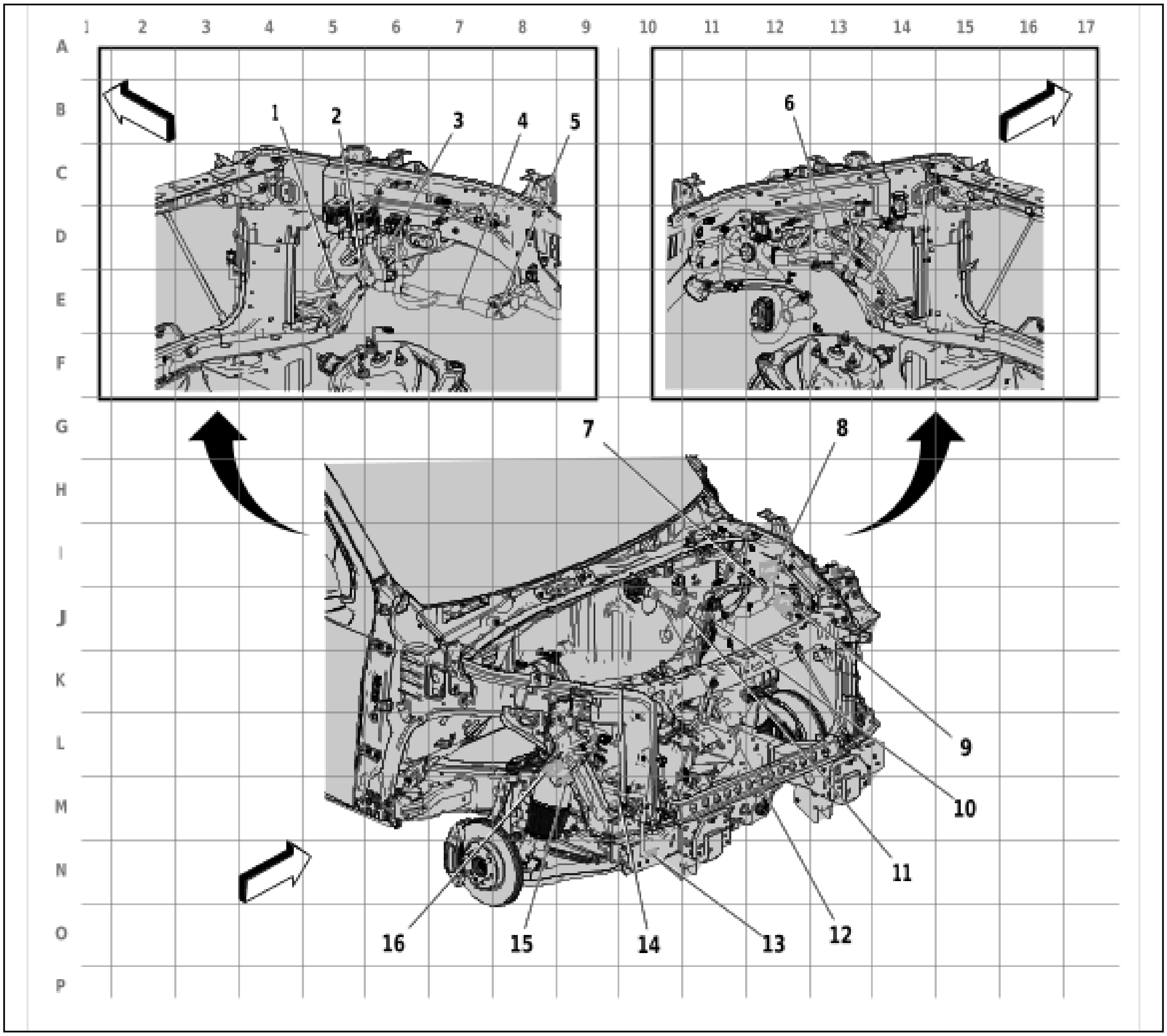
6678292

| Items |
|---|
| (1) X405P Power Steering Wiring Harness to Power Steering Control Module Wiring Harness |

## Body Wiring Harness - Front Compartment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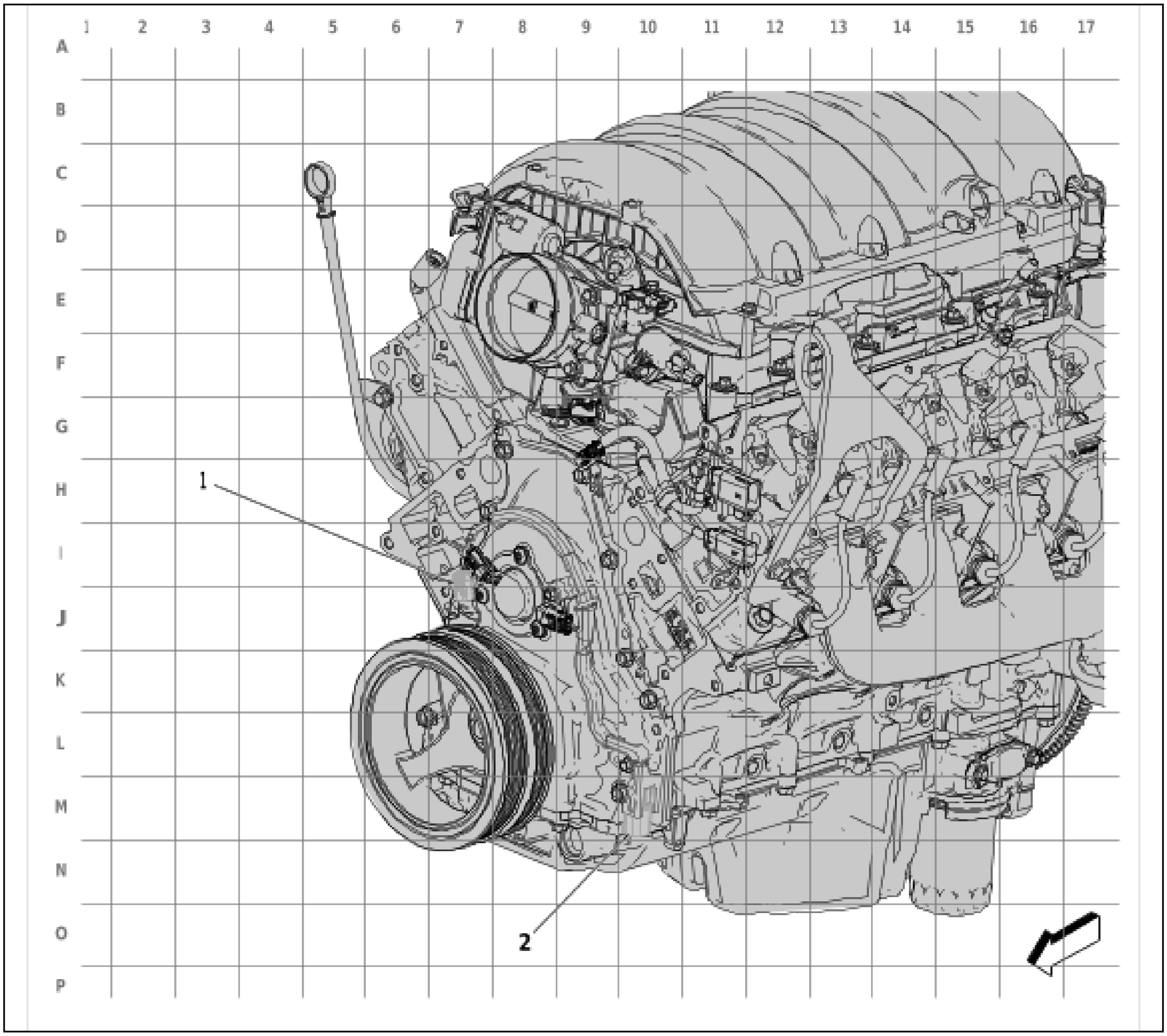
6977879

| Items |
|---|
| (1) J171 Body Wiring Harness |
| (2) J173 Body Wiring Harness |
| (3) J179 Body Wiring Harness |
| (4) J177 Body Wiring Harness |
| (5) J175 Body Wiring Harness |
| (6) J129 Body Wiring Harness |
| (7) J132 Body Wiring Harness |
| (8) X400 Chassis Wiring Harness to Body Wiring Harness |
| (9) X125 Engine Wiring Harness to Body Wiring Harness |
| (10) J126 Body Wiring Harness (G96) |
| (11) J127 Body Wiring Harness (G96) |
| (12) J128 Body Wiring Harness (G96) |

| Items |
|---|
| (13) X954 Body Wiring Harness to Forward Range Radar Sensor Wiring Harness |
| (14) J174 Body Wiring Harness |
| (15) X951 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness |
| (16) X950 Front Object Alarm Sensor Wiring Harness to Body Wiring Harness |

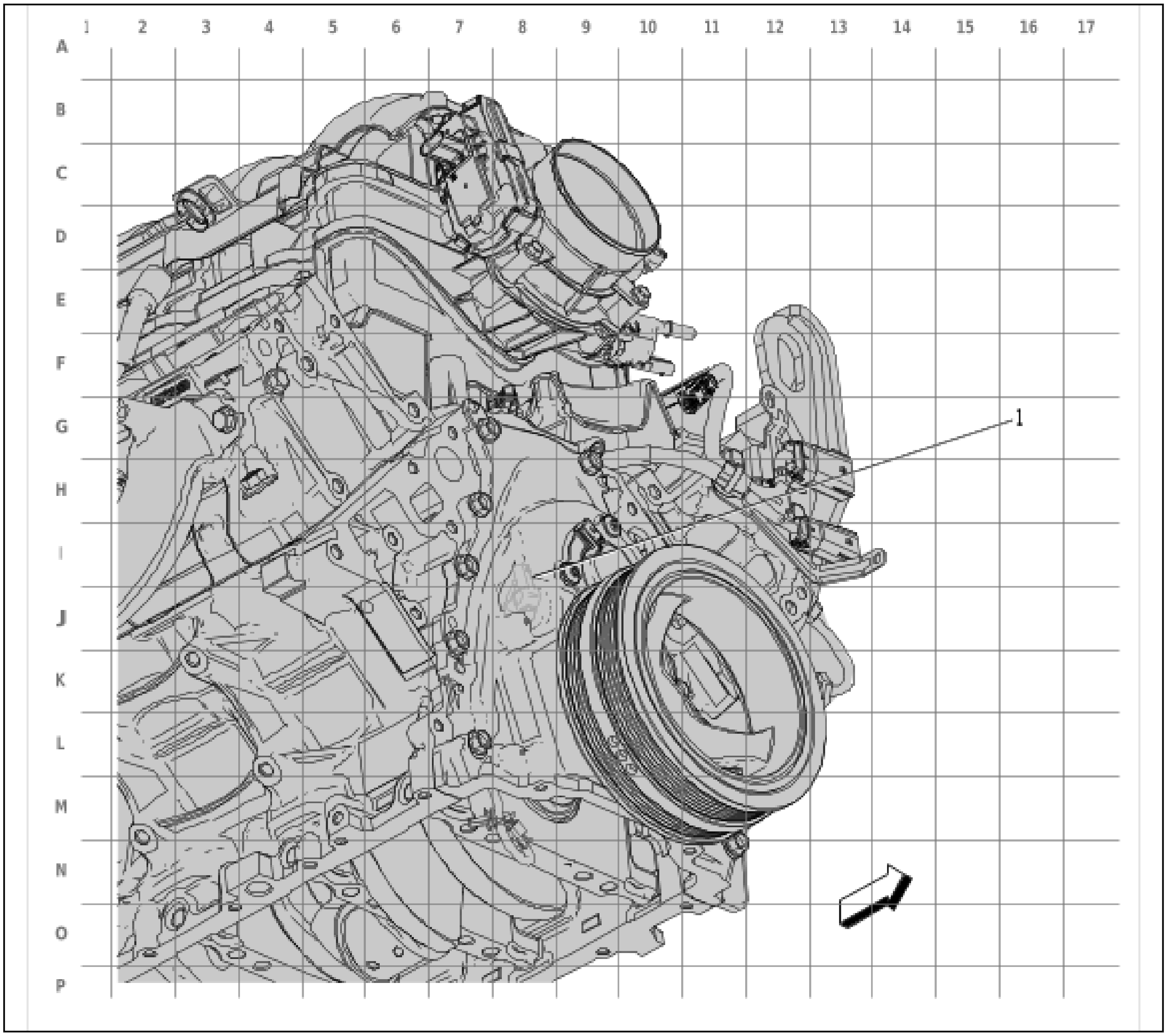
### Camshaft Position Sensor Wire Routing (L84 / L87)



6666127

| Items |
|---|
| (1) X129A Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Harness (L87) |
| (2) X128C Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87) |

## Oil Pump Flow Control Solenoid Valve Harness Routing (L87)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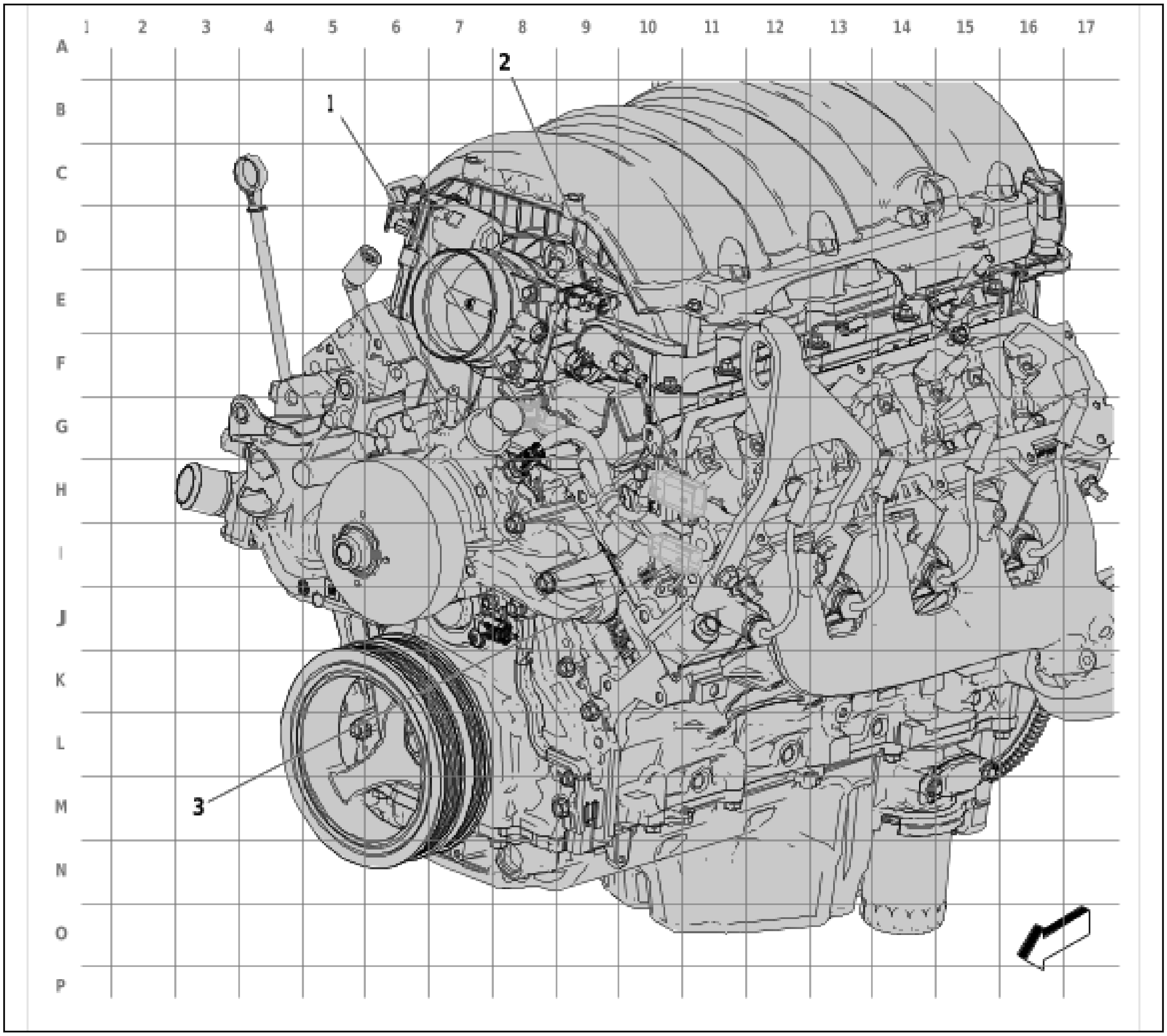
6666128

| Items |
|---|
| (1) X129A Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Harness (L87) |

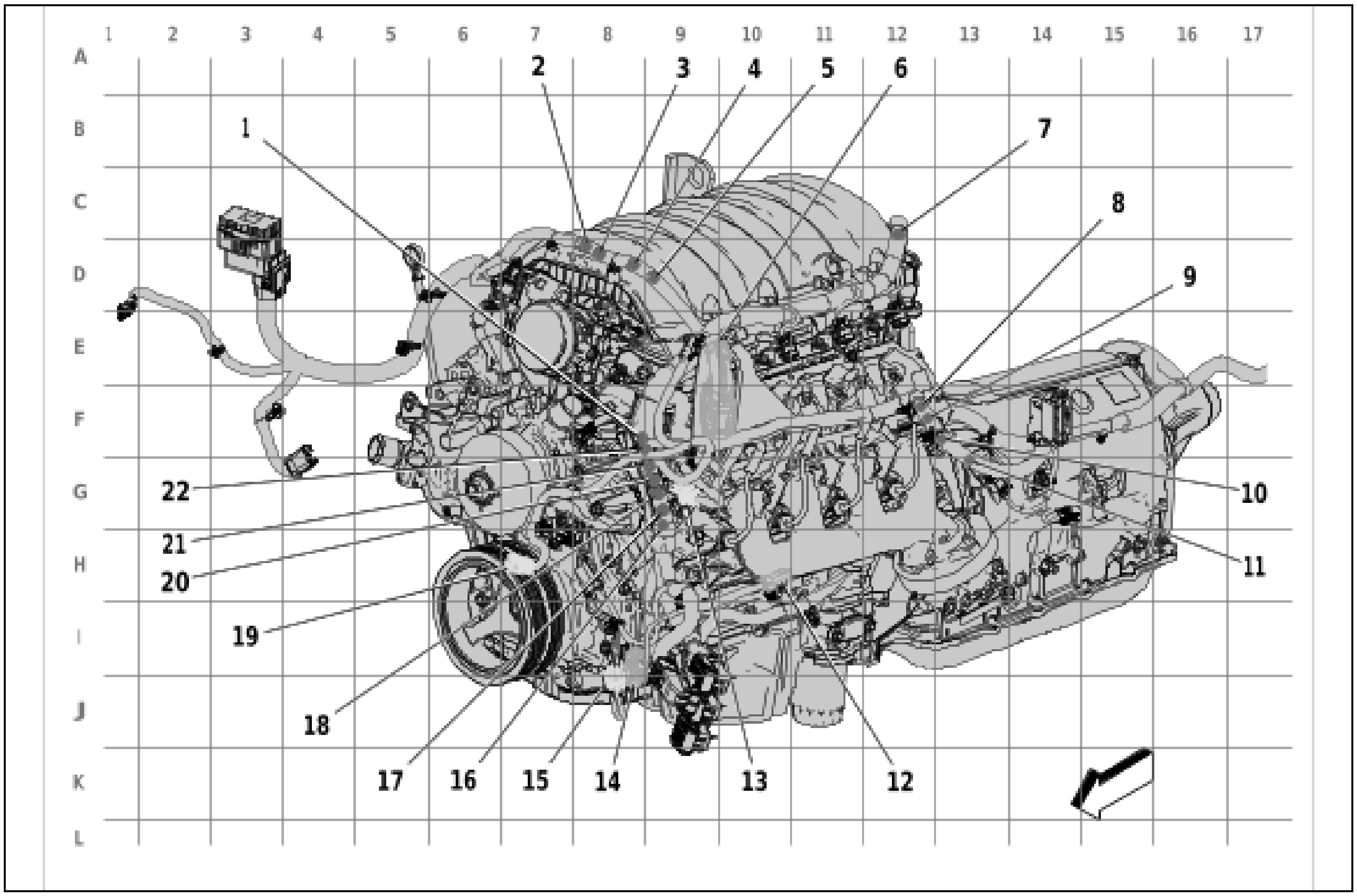
## Valve Rocker Arm Oil Control Valve Extension Harness Routing (L84 / L87)



6666129

| Items |
|---|
| (1) X963 Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness (L84 / L87) |
| (2) X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87) |
| (3) X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87) |

## Engine Wiring Harness Routing - Front (L84 / L87)



6676704

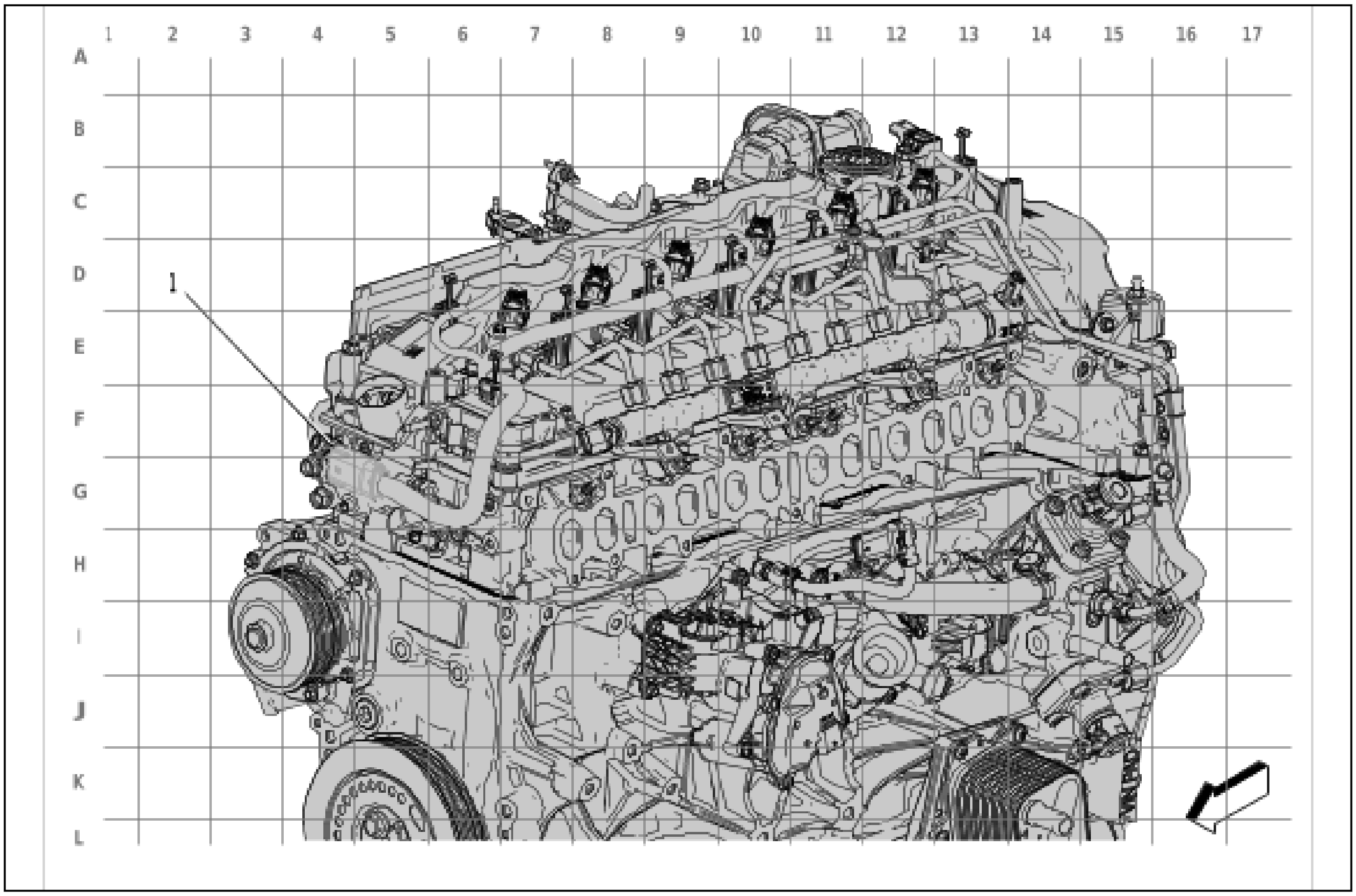
| Items |
|---|
| (1) J156 Engine Wiring Harness (L84 / L87) |
| (2) J161 Engine Wiring Harness (L84 / L87) |
| (3) J180 Engine Wiring Harness |
| (4) J158 Engine Wiring Harness |
| (5) J159 Engine Wiring Harness |
| (6) X125 Engine Wiring Harness to Body Wiring Harness |
| (7) J164 Engine Wiring Harness (L84 / L87) |
| (8) J184 Engine Wiring Harness (NP0 / NQH) |
| (9) J185 Engine Wiring Harness (NP0 / NQH) |
| (10) J188 Engine Wiring Harness (NP0 / NQH) |
| (11) J189 Engine Wiring Harness (NP0 / NQH) |
| (12) X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness (NP0 / NQH) |
| (13) X961 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87) |
| (14) X403 Engine Wiring Harness to Chassis Wiring Harness |
| (15) X128C Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87) |
| (16) J101 Engine Wiring Harness |
| (17) J152 Engine Wiring Harness (L84 / L87) |

| Items |
|---|
| (18) J151 Engine Wiring Harness |
| (19) X604A Engine Harness to Active Grille Air Shutter Harness |
| (20) J154 Engine Wiring Harness |
| (21) J181 Engine Wiring Harness |
| (22) J155 Engine Wiring Harness (L84 / L87) |

### Engine Wiring Harness Routing - Left Rear (L84 / L87)

| Items |
|---|
| (1) X962 Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness (L84 / L87) |
| (2) J166 Engine Wiring Harness (L84 / L87) |
| (3) X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left |
| (4) J167 Engine Wiring Harness (L84 / L87) |
| (5) J165 Engine Wiring Harness (L84 / L87) |
| (6) J168 Engine Wiring Harness |
| (7) X161 Engine Wiring Harness to Fuel Injector Wiring Harness - Right (L84 / L87) |
| (8) J198 Engine Wiring Harness (NP0 / NQH) |
| (9) J197 Engine Wiring Harness (NP0 / NQH) |
| (10) J150 Engine Wiring Harness |

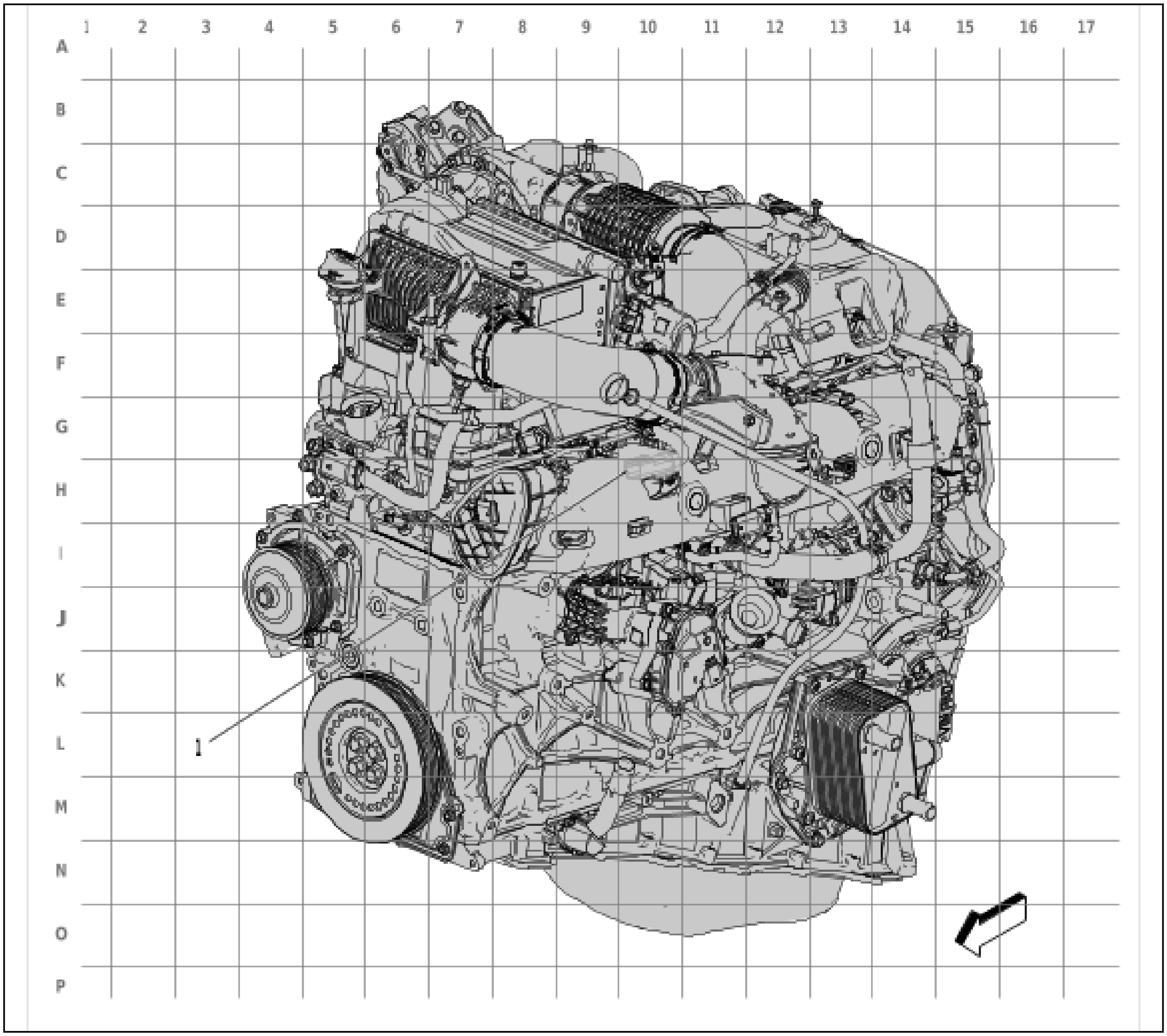
### Fuel Injector Wiring Harness Routing (LZ0)



6666130

| Items |
|---|
| (1) X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left |

## Diesel Glow Plug Wiring Harness Routing (LZ0)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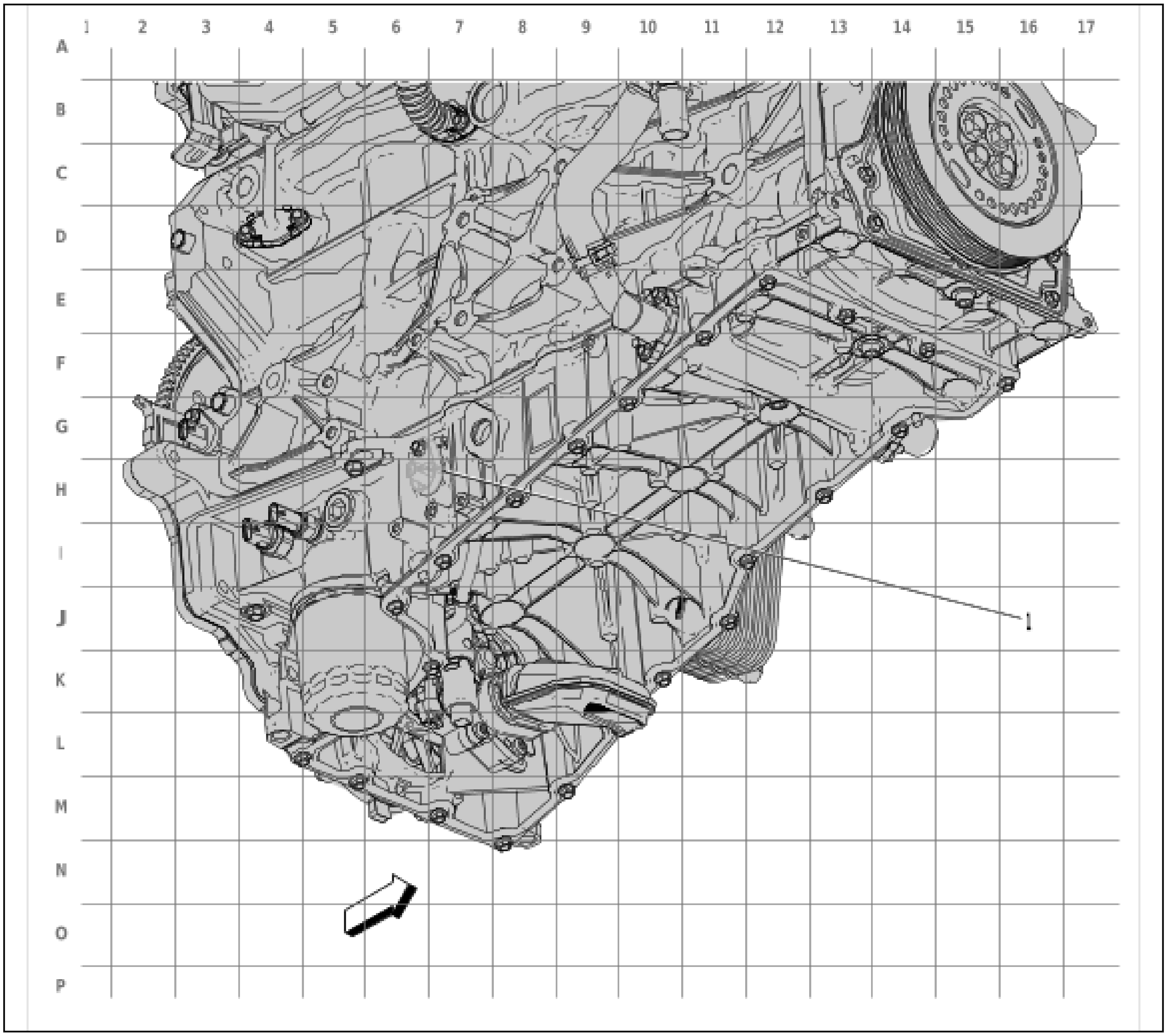
6666131

| Items |
|---|
| (1) X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0) |

### Oil Pump Flow Control Solenoid Valve Harness Routing (LZ0)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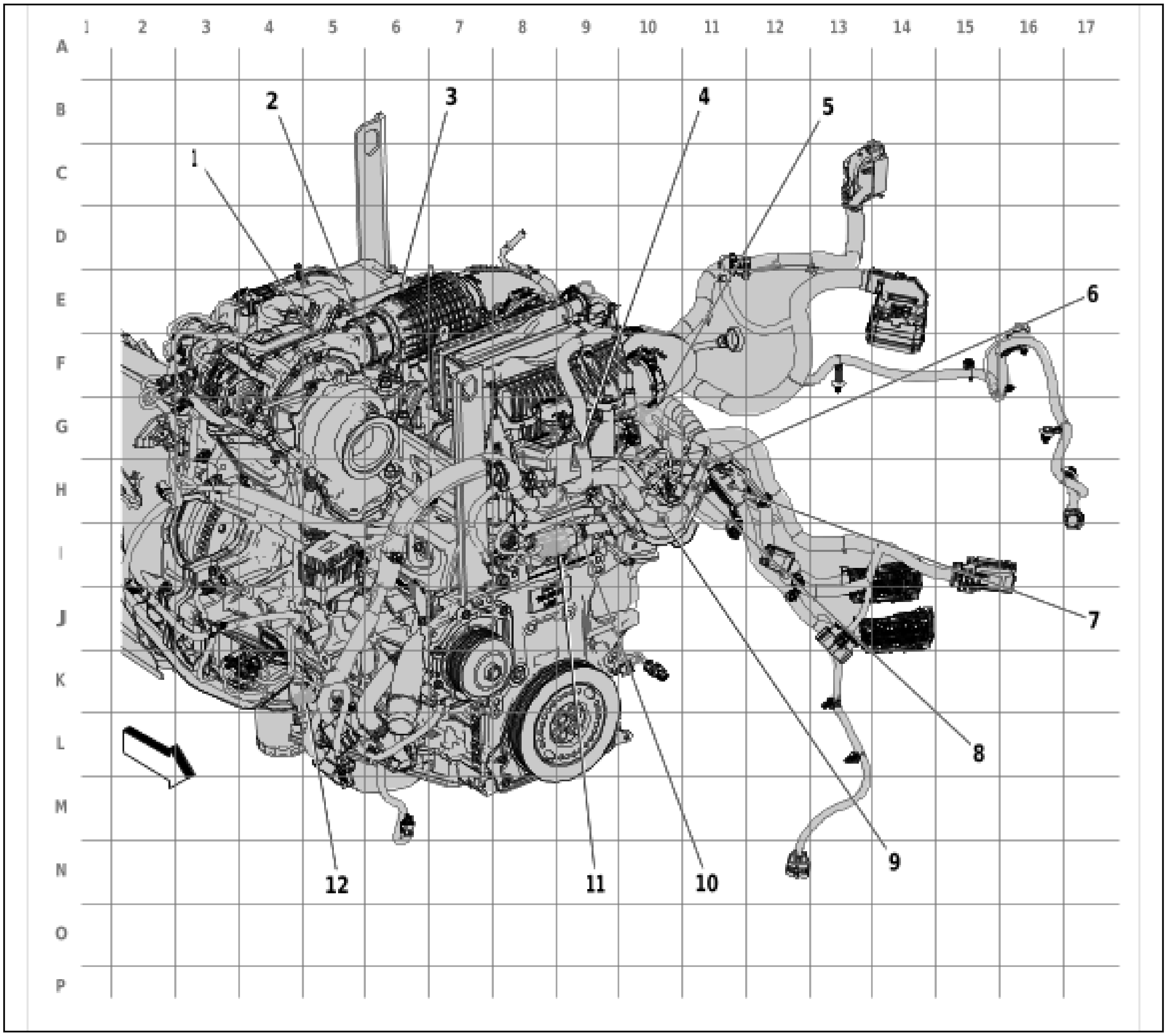
6666259

| Items |
|---|
| (1) X129B Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Wiring Harness (LZ0) |

## Engine Wiring Harness Routing - Front (LZ0)

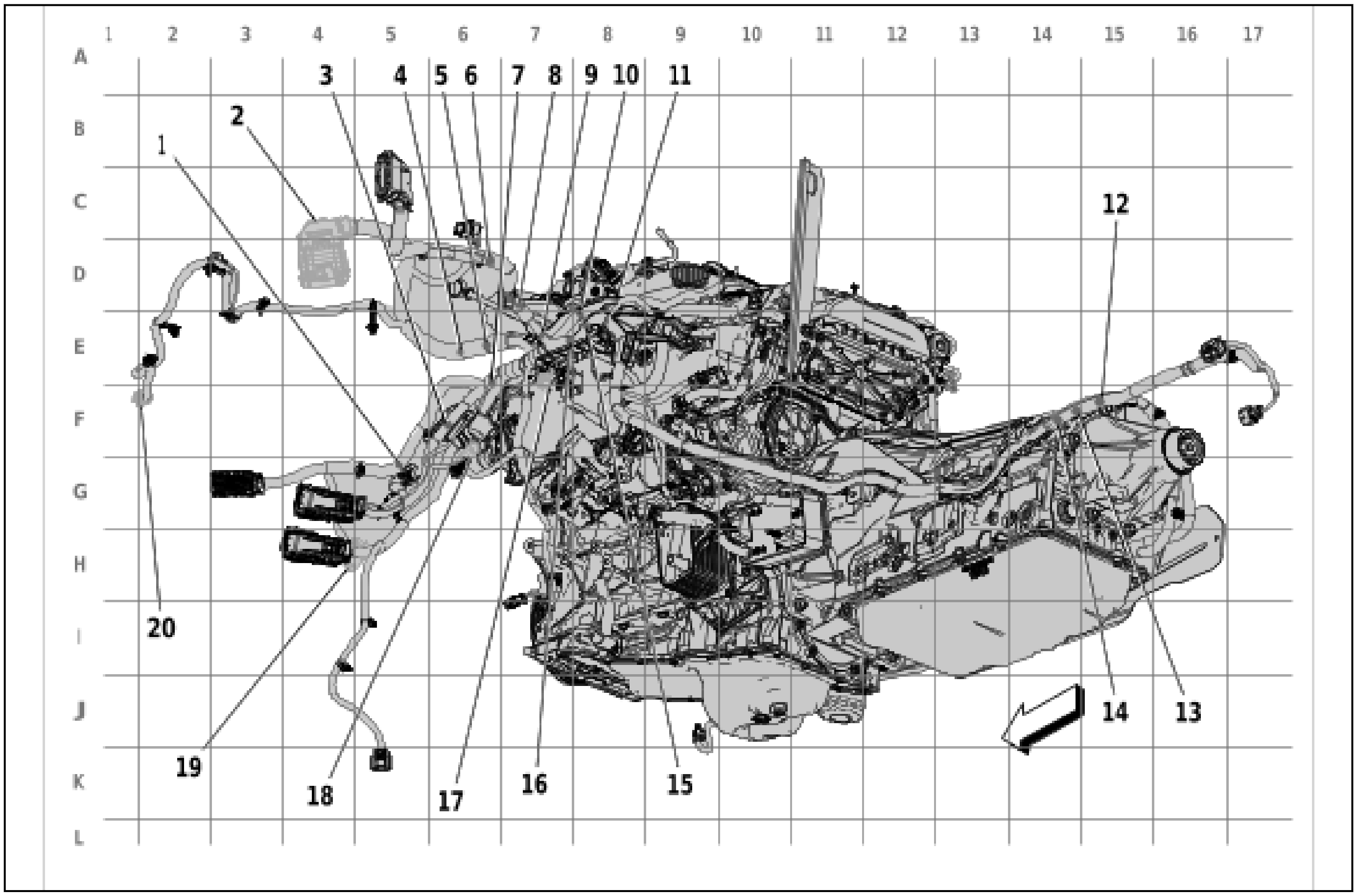


6677058

| Items |
|---|
| (1) J183 Engine Wiring Harness |
| (2) J172 Engine Wiring Harness (LZ0) |
| (3) J151 Engine Wiring Harness |
| (4) J186 Engine Wiring Harness (LZ0) |
| (5) X163 Engine Wiring Harness to Diesel Glow Plug Wiring Harness (LZ0) |
| (6) J168 Engine Wiring Harness |
| (7) J101 Engine Wiring Harness |
| (8) J158 Engine Wiring Harness |
| (9) J100 Engine Wiring Harness (LZ0) |
| (10) J181 Engine Wiring Harness |

| Items |
|---|
| (11) X160 Engine Wiring Harness to Fuel Injector Wiring Harness - Left |
| (12) X129B Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Wiring Harness (LZ0) |

### Engine Wiring Harness Routing - Left Rear (LZ0)

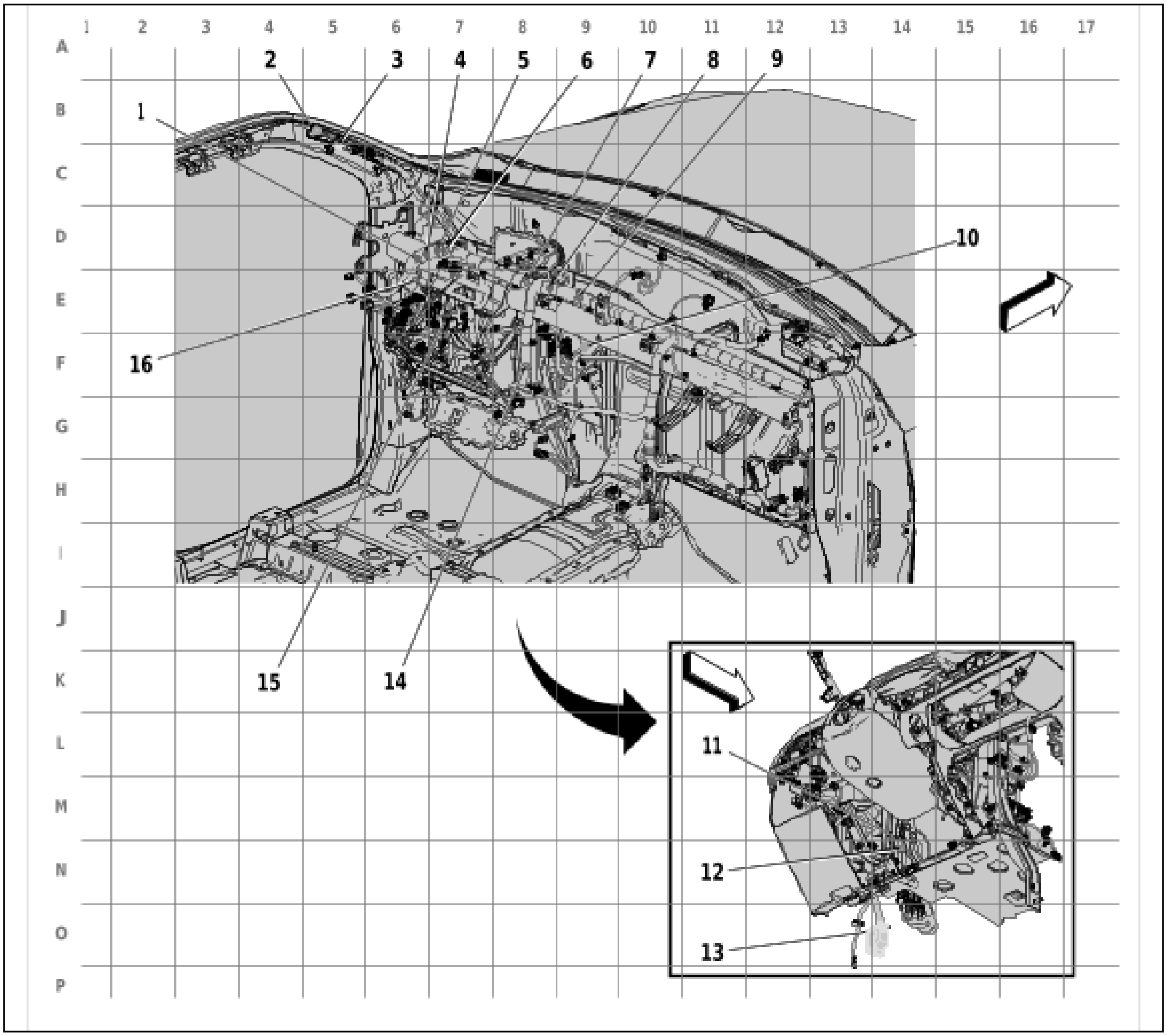


6677059

| Items |
|---|
| (1) J159 Engine Wiring Harness |
| (2) X125 Engine Wiring Harness to Body Wiring Harness |
| (3) J154 Engine Wiring Harness |
| (4) J130 Engine Wiring Harness (LZ0) |
| (5) J131 Engine Wiring Harness (LZ0) |
| (6) J185 Engine Wiring Harness (NP0 / NQH) |
| (7) J149 Engine Wiring Harness (LZ0) |
| (8) J188 Engine Wiring Harness (NP0 / NQH) |
| (9) J189 Engine Wiring Harness (NP0 / NQH) |
| (10) J170 Engine Wiring Harness (LZ0) |
| (11) J180 Engine Wiring Harness |
| (12) J197 Engine Wiring Harness (NP0 / NQH) |
| (13) J198 Engine Wiring Harness (NP0 / NQH) |
| (14) J184 Engine Wiring Harness (NP0 / NQH) |
| (15) J169 Engine Wiring Harness (LZ0) |

| Items |
|---|
| (16) J150 Engine Wiring Harness |
| (17) X944 Engine Wiring Harness to Engine Coolant Temperature Sensor Harness (LZ0) |
| (18) X415 Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness (NP0 / NQH) |
| (19) X403 Engine Wiring Harness to Chassis Wiring Harness |
| (20) X604A Engine Harness to Active Grille Air Shutter Harness |

## Instrument Panel Wiring Harness Routing - Left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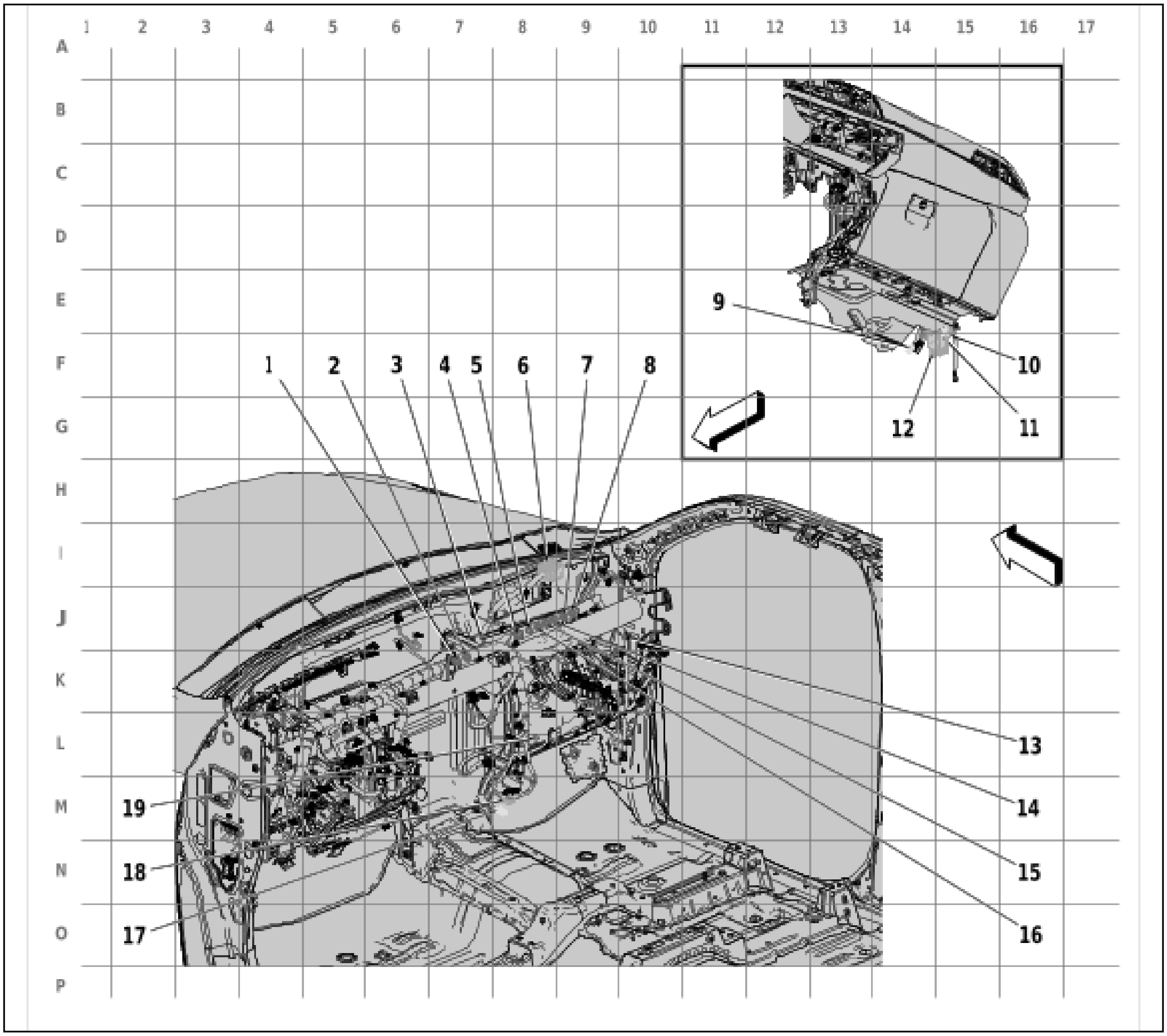
6676705

| Items |
|---|
| (1) J235 Instrument Panel Wiring Harness (UQF) |
| (2) X396 Instrument Panel Wiring Harness to Antenna Wiring Harness |

| Items |
|---|
| (3) X397 Instrument Panel Wiring Harness to Antenna Wiring Harness (U2Q) |
| (4) J217 Instrument Panel Wiring Harness |
| (5) J237 Instrument Panel Wiring Harness |
| (6) J238 Instrument Panel Wiring Harness (UQF) |
| (7) J267 Instrument Panel Wiring Harness |
| (8) J246 Instrument Panel Wiring Harness |
| (9) J242 Instrument Panel Wiring Harness |
| (10) X250 Instrument Panel Wiring Harness to Heater Wiring Harness |
| (11) J240 Instrument Panel Wiring Harness |
| (12) W24 Blunt Cut - Trailer Brakes Provision (- JJ1) |
| (13) X211 Instrument Panel Wiring Harness to Body Wiring Harness |
| (14) J241 Instrument Panel Wiring Harness |
| (15) J236 Instrument Panel Wiring Harness |
| (16) J233 Instrument Panel Wiring Harness |

## Instrument Panel Wiring Harness Routing - Right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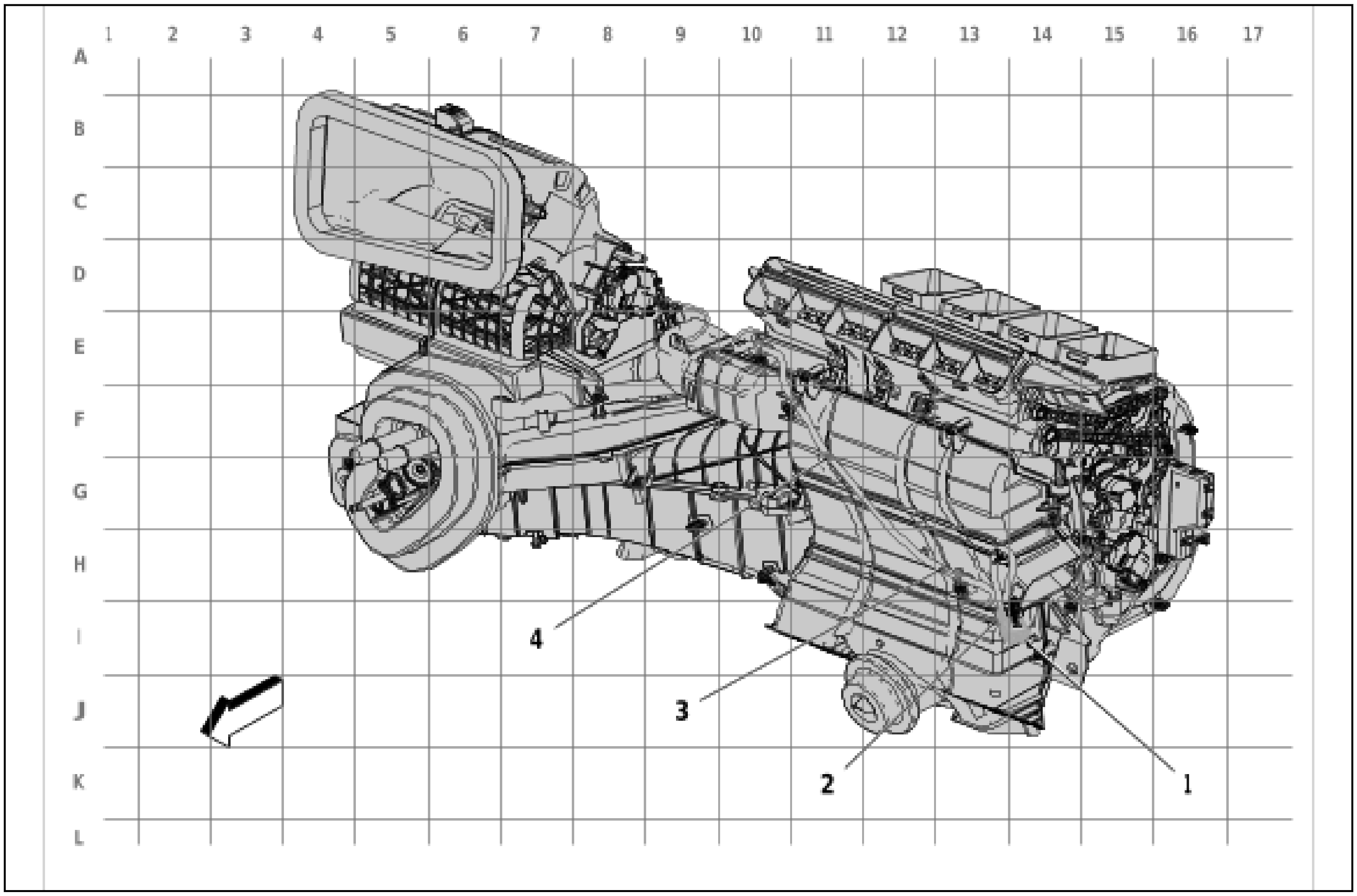
6676706

| Items |
|---|
| (1) J249 Instrument Panel Wiring Harness |
| (2) J248 Instrument Panel Wiring Harness |
| (3) J243 Instrument Panel Wiring Harness |
| (4) J244 Instrument Panel Wiring Harness |
| (5) J250 Instrument Panel Wiring Harness |
| (6) X370A Headlining Trim Panel Harness to Instrument Panel Wiring Harness |
| (7) J252 Instrument Panel Wiring Harness (UQF) |
| (8) J253 Instrument Panel Wiring Harness |
| (9) X217 Instrument Panel Wiring Harness to Body Wiring Harness |
| (10) X216 Instrument Panel Wiring Harness to Body Wiring Harness |

| Items |
|---|
| (11) X214 Instrument Panel Wiring Harness to Body Wiring Harness |
| (12) X210 Instrument Panel Wiring Harness to Body Wiring Harness |
| (13) J254 Instrument Panel Wiring Harness |
| (14) J213 Instrument Panel Wiring Harness |
| (15) J216 Instrument Panel Wiring Harness |
| (16) J251 Instrument Panel Wiring Harness (UQF) |
| (17) X225C Front Floor Console Wiring Harness to Instrument Panel Wiring Harness |
| (18) X225B Instrument Panel Wiring Harness to Front Floor Console Wiring Harness |
| (19) J247 Instrument Panel Wiring Harness |

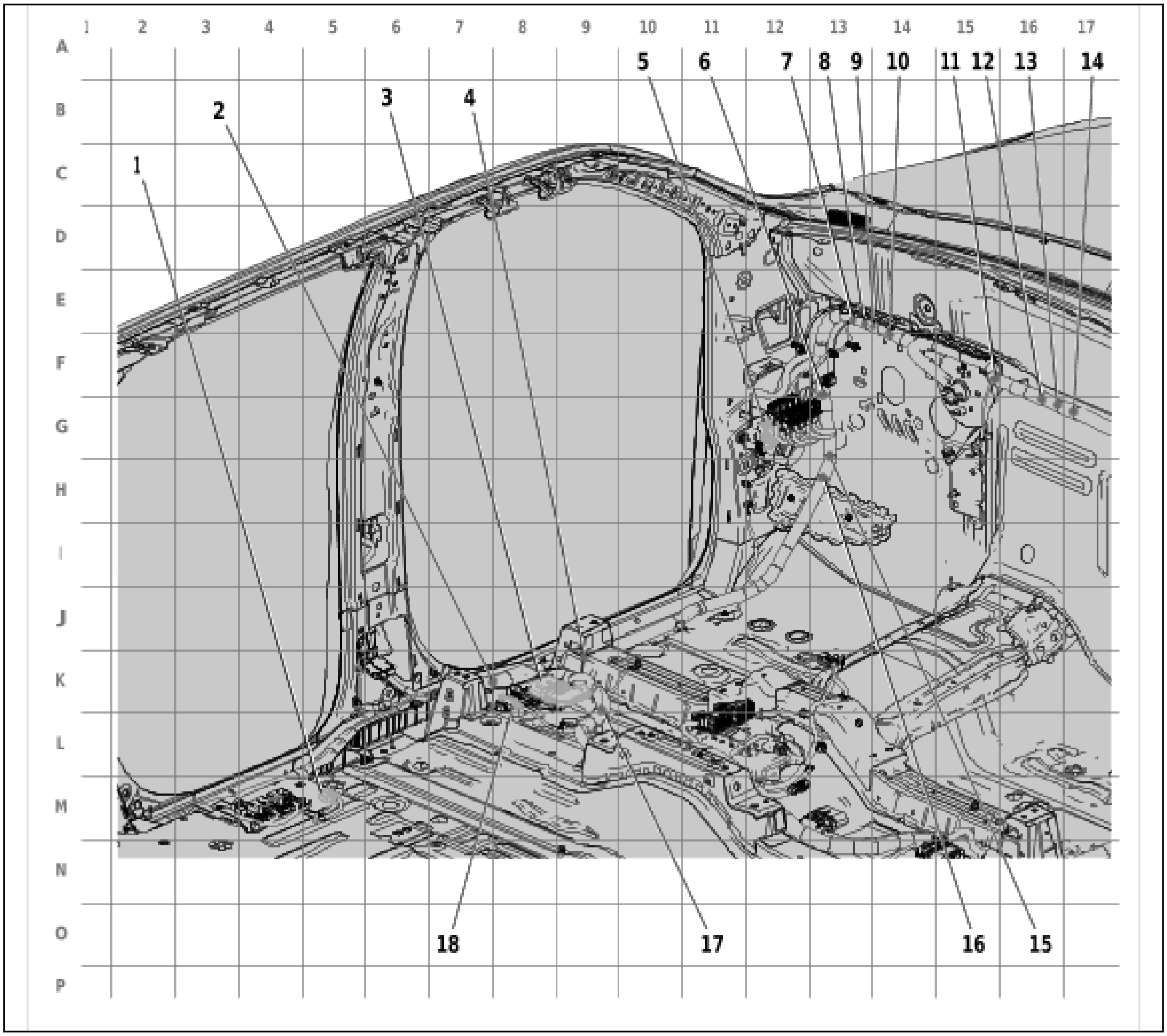
### Heater Wiring Harness Routing



6676707

| Items |
|---|
| (1) X250 Instrument Panel Wiring Harness to Heater Wiring Harness |
| (2) J220 Heater Wiring Harness |
| (3) J222 Heater Wiring Harness |
| (4) J221 Heater Wiring Harness |

### Body Wiring Harness - Left Front of Passenger Compartment Routing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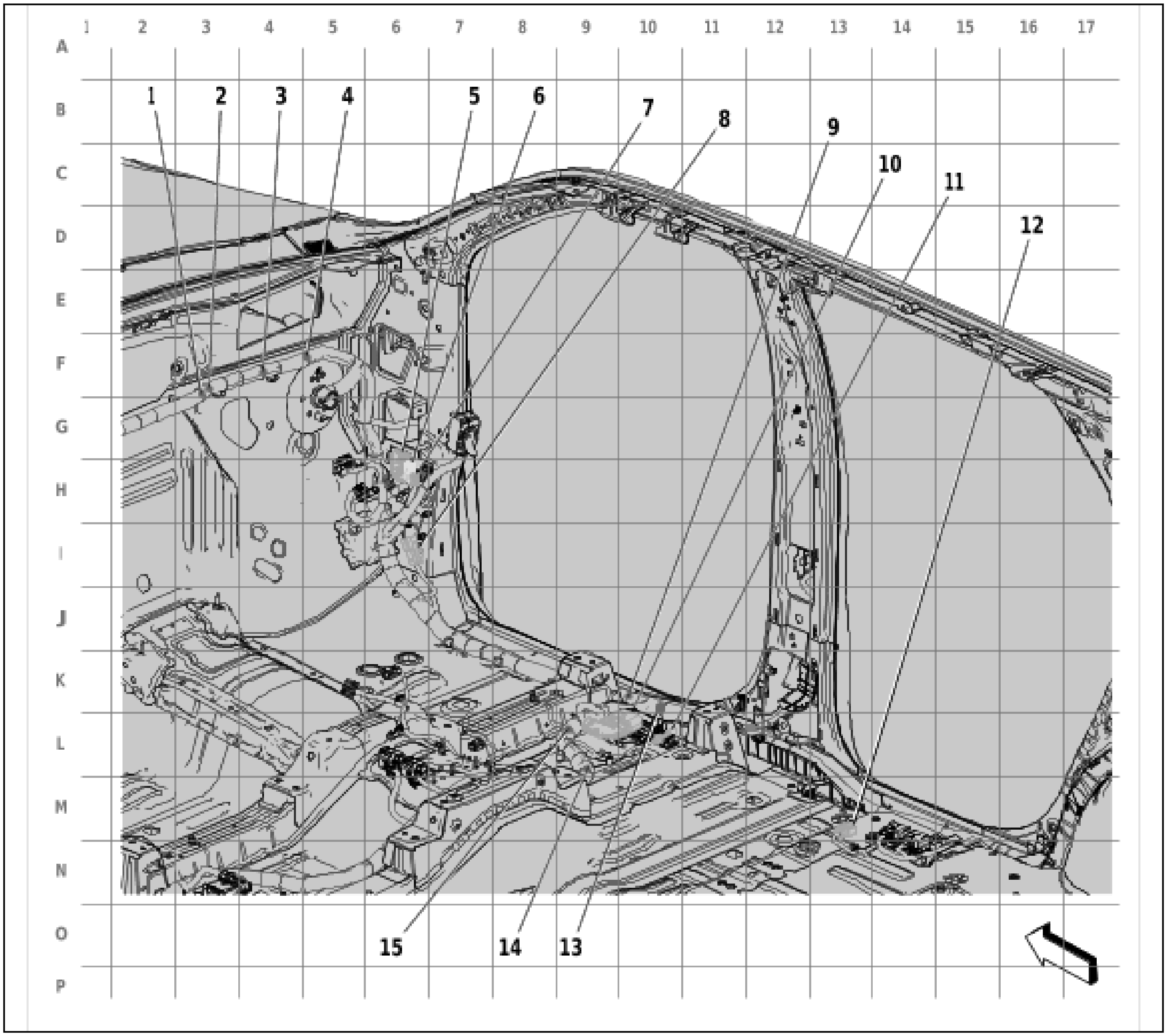
6685751

| Items |
|---|
| (1) X340A Body Wiring Harness to 2nd Row Seat Wiring Harness - Left Cushion |
| (2) J329 Body Wiring Harness |
| (3) X328 Front Seat Wiring Harness - Driver to Body Wiring Harness |
| (4) J210 Body Wiring Harness |
| (5) X211 Instrument Panel Wiring Harness to Body Wiring Harness |
| (6) J211 Body Wiring Harness |
| (7) J209 Body Wiring Harness |
| (8) J208 Body Wiring Harness |
| (9) J206 Body Wiring Harness |
| (10) J207 Body Wiring Harness |

| Items |
|---|
| (11) J201 Body Wiring Harness |
| (12) J203 Body Wiring Harness |
| (13) J204 Body Wiring Harness |
| (14) J205 Body Wiring Harness |
| (15) J212 Body Wiring Harness |
| (16) J202 Body Wiring Harness |
| (17) J331 Body Wiring Harness |
| (18) X329 Body Wiring Harness to Front Seat Wiring Harness - Driver (UW9) |

### Body Wiring Harness - Right Front of Passenger Compartment Routing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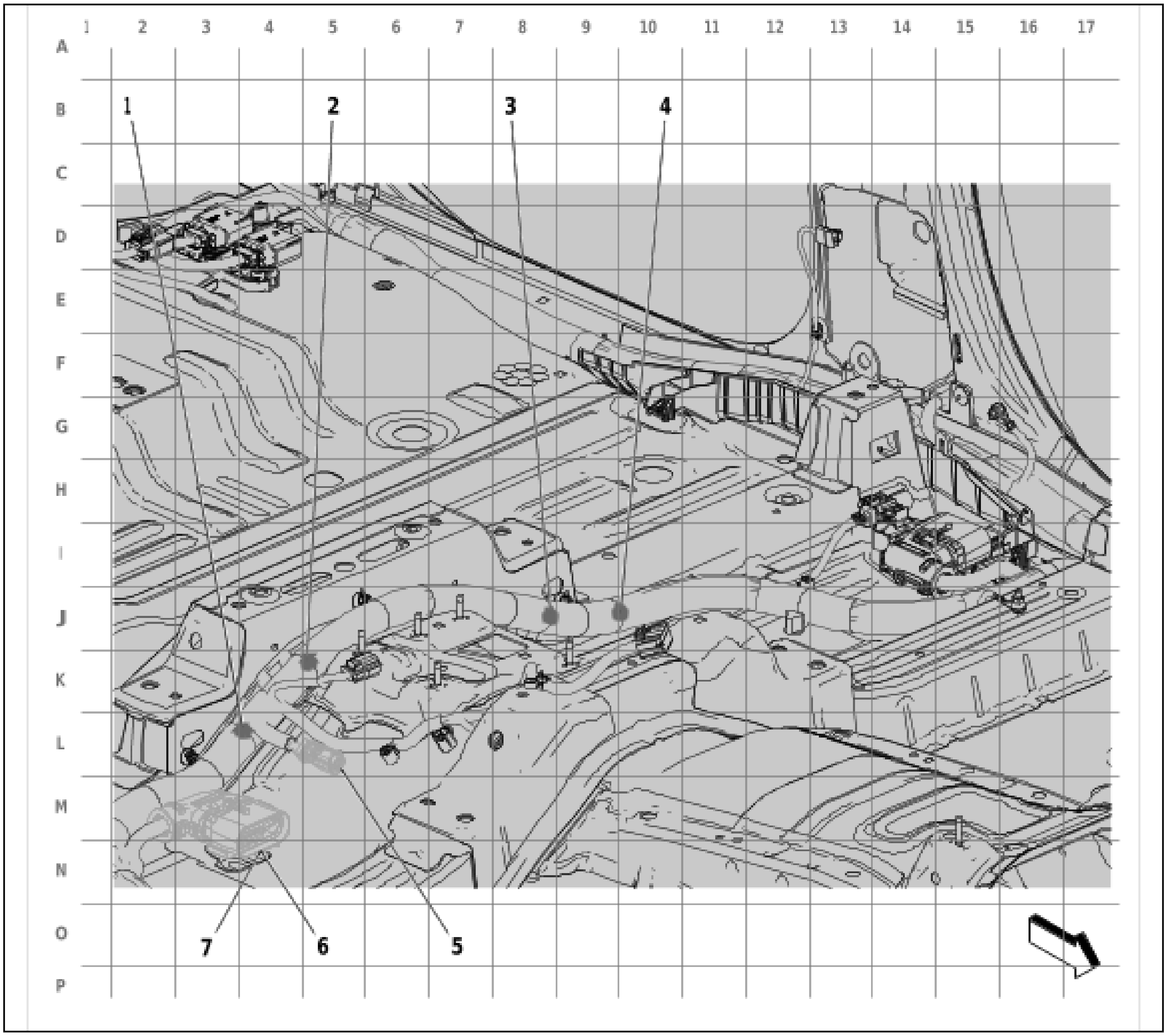
6685750

| Items |
|---|
| (1) J265 Body Wiring Harness |
| (2) J268 Body Wiring Harness |

| Items |
|---|
| (3) J263 Body Wiring Harness |
| (4) J215 Body Wiring Harness |
| (5) X210 Instrument Panel Wiring Harness to Body Wiring Harness |
| (6) X214 Instrument Panel Wiring Harness to Body Wiring Harness |
| (7) X216 Instrument Panel Wiring Harness to Body Wiring Harness |
| (8) X251L Heater Wiring Harness to Body Wiring Harness (C3A) |
| (9) J369 Body Wiring Harness |
| (10) X333 Front Seat Wiring Harness - Passenger to Body Wiring Harness |
| (11) X344L Body Wiring Harness to Front Seat Wiring Harness - Passenger (UW9) |
| (12) X344A Body Wiring Harness to 2nd Row Seat Wiring Harness - Right Cushion |
| (13) J362 Body Wiring Harness |
| (14) J361 Body Wiring Harness |
| (15) J390 Body Wiring Harness |

### Body Wiring Harness - Center of Passenger Compartment Routing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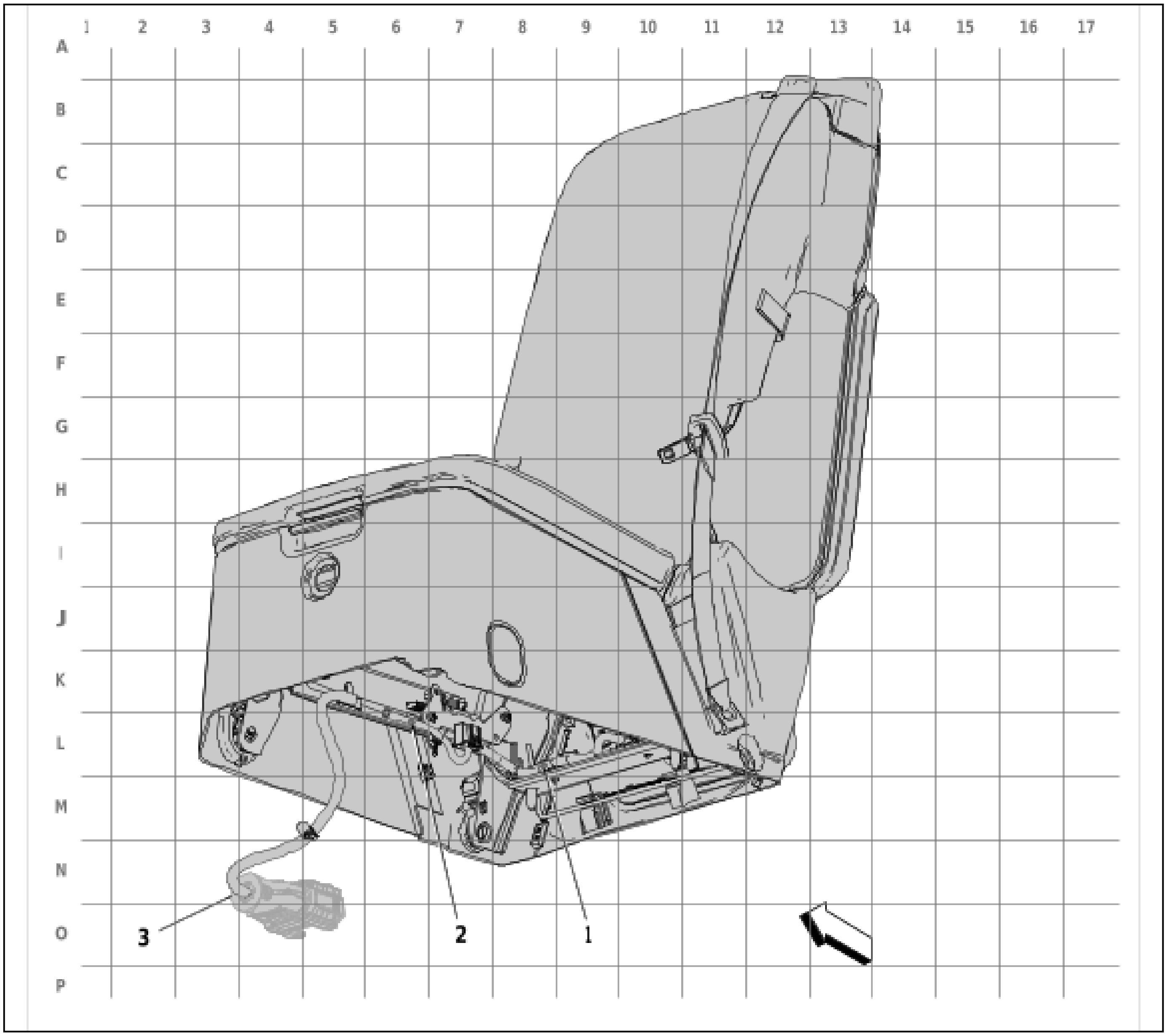
6879234

| Items |
|---|
| (1) J358 Body Wiring Harness (UW9) |
| (2) J357 Body Wiring Harness |
| (3) J333 Body Wiring Harness |
| (4) J334 Body Wiring Harness |
| (5) X226 Front Floor Console Wiring Harness to Body Wiring Harness (UW9) |
| (6) X225A Front Floor Console Wiring Harness to Body Wiring Harness (DCH / DCK / D07) |
| (7) X225D Front Seat Wiring Harness - Center to Body Wiring Harness (AZ3) |

### Front Seat Wiring Harness - Center Routing (AZ3)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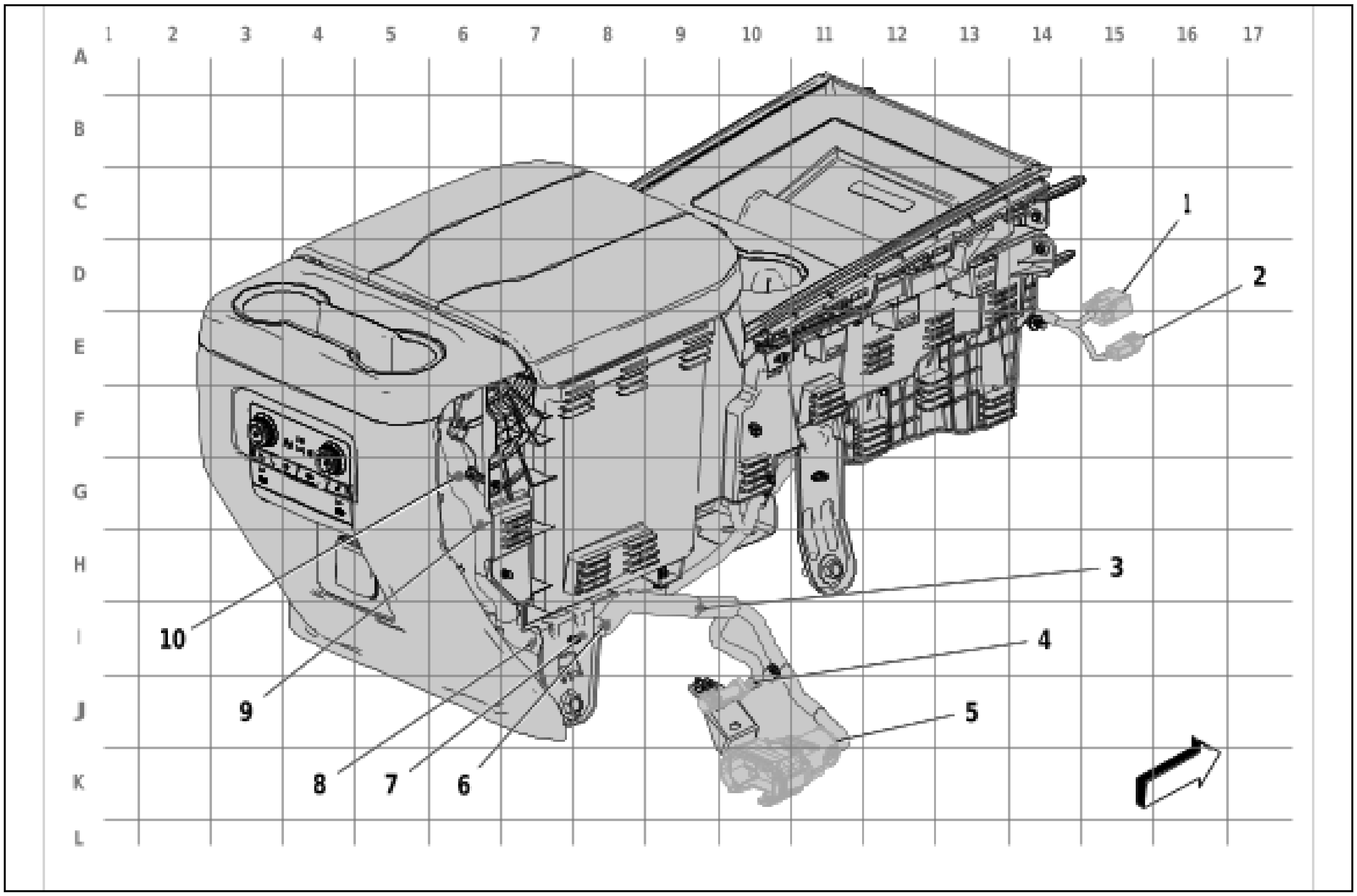
6691850

| Items |
|---|
| (1) J301 Front Floor Console Wiring Harness |
| (2) J300 Front Floor Console Wiring Harness |
| (3) X225D Front Seat Wiring Harness - Center to Body Wiring Harness (AZ3) |

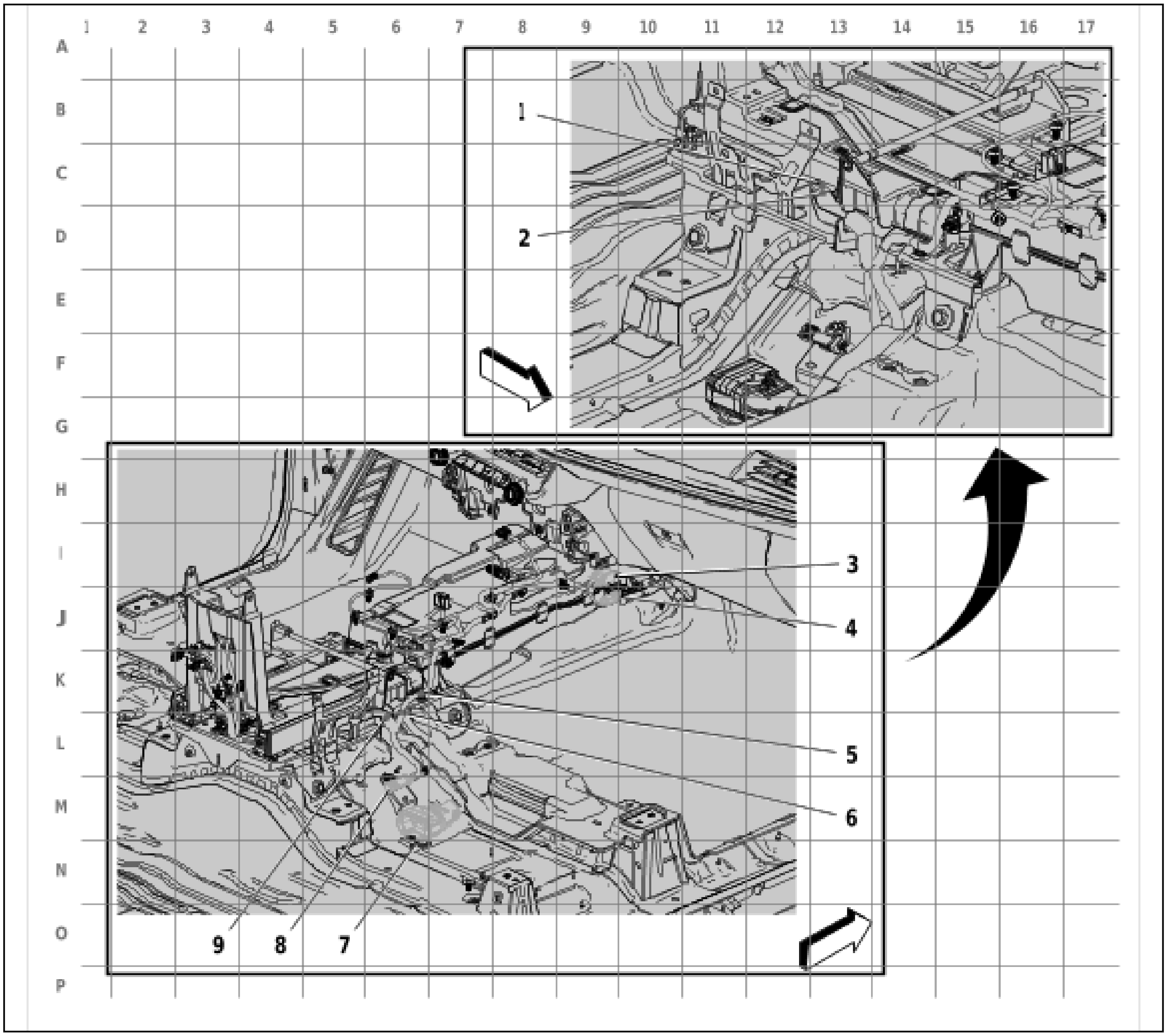
## Front Floor Console Wiring Harness Routing (D07)



6686793

| Items |
|---|
| (1) X225B Instrument Panel Wiring Harness to Front Floor Console Wiring Harness |
| (2) X225C Front Floor Console Wiring Harness to Instrument Panel Wiring Harness |
| (3) J386 Front Floor Console Wiring Harness (BOR / BOY) |
| (4) X226 Front Floor Console Wiring Harness to Body Wiring Harness (UW9) |
| (5) X225A Front Floor Console Wiring Harness to Body Wiring Harness (DCH / DCK / D07) |
| (6) J300 Front Floor Console Wiring Harness |
| (7) J302 Front Floor Console Wiring Harness (D07 / DCH / DCK) |
| (8) J303 Front Floor Console Wiring Harness (D07 / DCK) |
| (9) J301 Front Floor Console Wiring Harness |
| (10) J320 Front Floor Console Wiring Harness |

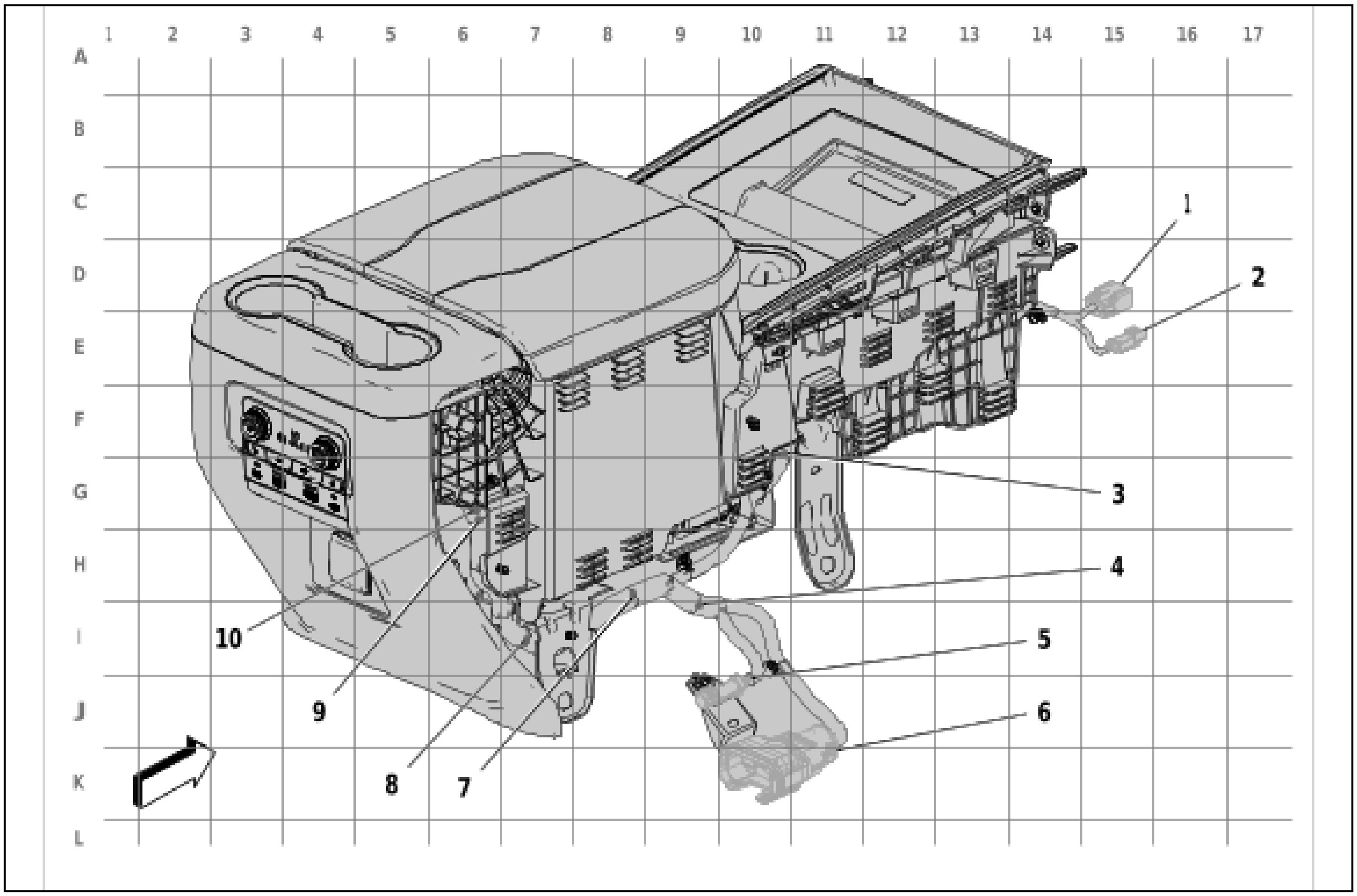
## Front Floor Console Wiring Harness Routing (DCH)



6686794

| Items |
|---|
| (1) J320 Front Floor Console Wiring Harness |
| (2) J301 Front Floor Console Wiring Harness |
| (3) X225B Instrument Panel Wiring Harness to Front Floor Console Wiring Harness |
| (4) X225C Front Floor Console Wiring Harness to Instrument Panel Wiring Harness |
| (5) J386 Front Floor Console Wiring Harness (BOR / BOY) |
| (6) J300 Front Floor Console Wiring Harness |
| (7) X225A Front Floor Console Wiring Harness to Body Wiring Harness (DCH / DCK / D07) |
| (8) X226 Front Floor Console Wiring Harness to Body Wiring Harness (UW9) |
| (9) J302 Front Floor Console Wiring Harness (D07 / DCH / DCK) |

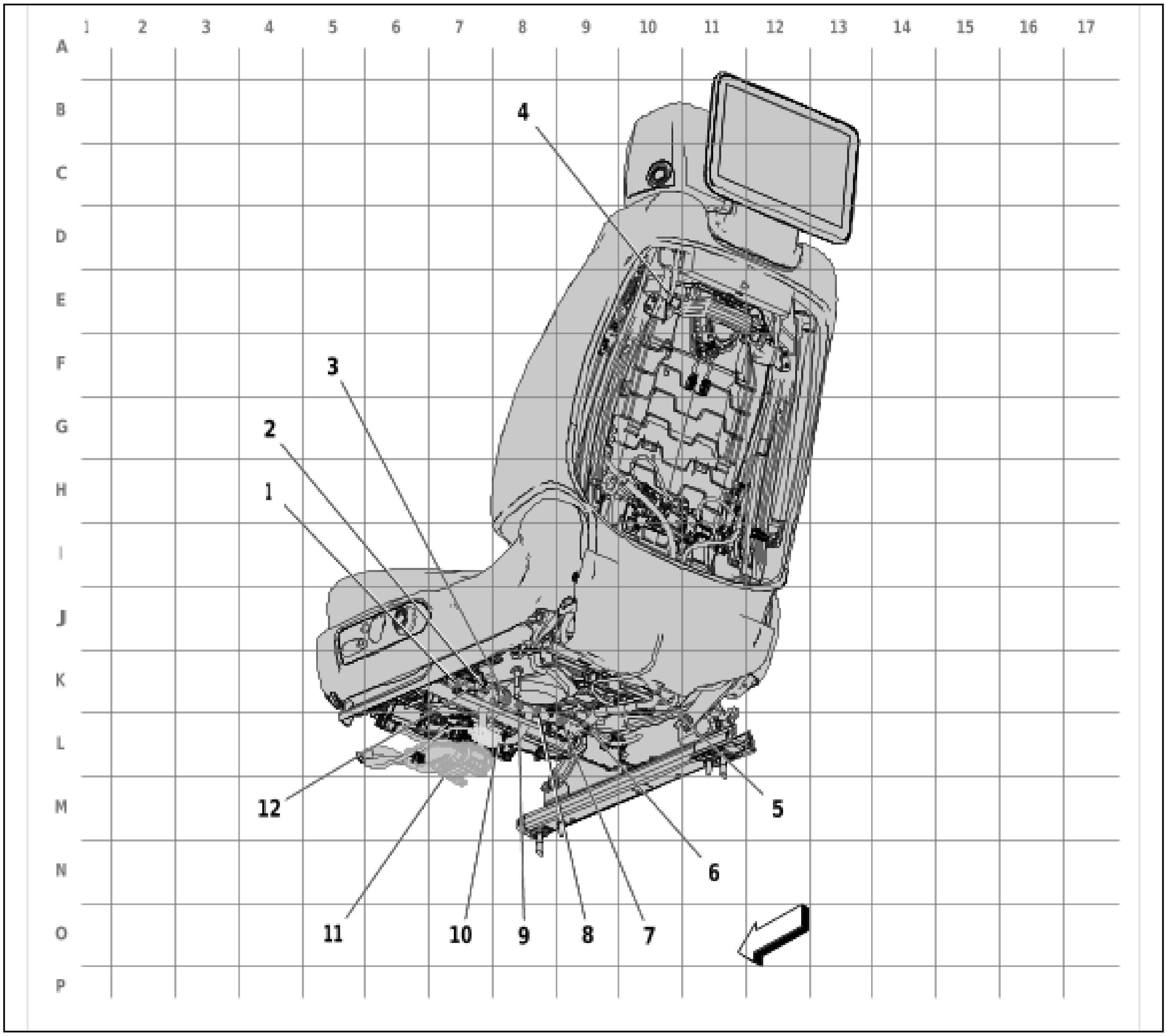
### Front Floor Console Wiring Harness Routing (DCK)



6686795

| Items |
|---|
| (1) X225B Instrument Panel Wiring Harness to Front Floor Console Wiring Harness |
| (2) X225C Front Floor Console Wiring Harness to Instrument Panel Wiring Harness |
| (3) J386 Front Floor Console Wiring Harness (BOR / BOY) |
| (4) J302 Front Floor Console Wiring Harness (D07 / DCH / DCK) |
| (5) X226 Front Floor Console Wiring Harness to Body Wiring Harness (UW9) |
| (6) X225A Front Floor Console Wiring Harness to Body Wiring Harness (DCH / DCK / D07) |
| (7) J300 Front Floor Console Wiring Harness |
| (8) J303 Front Floor Console Wiring Harness (D07 / DCK) |
| (9) J301 Front Floor Console Wiring Harness |
| (10) J320 Front Floor Console Wiring Harness |

### Front Seat Wiring Harness - Driver Routing

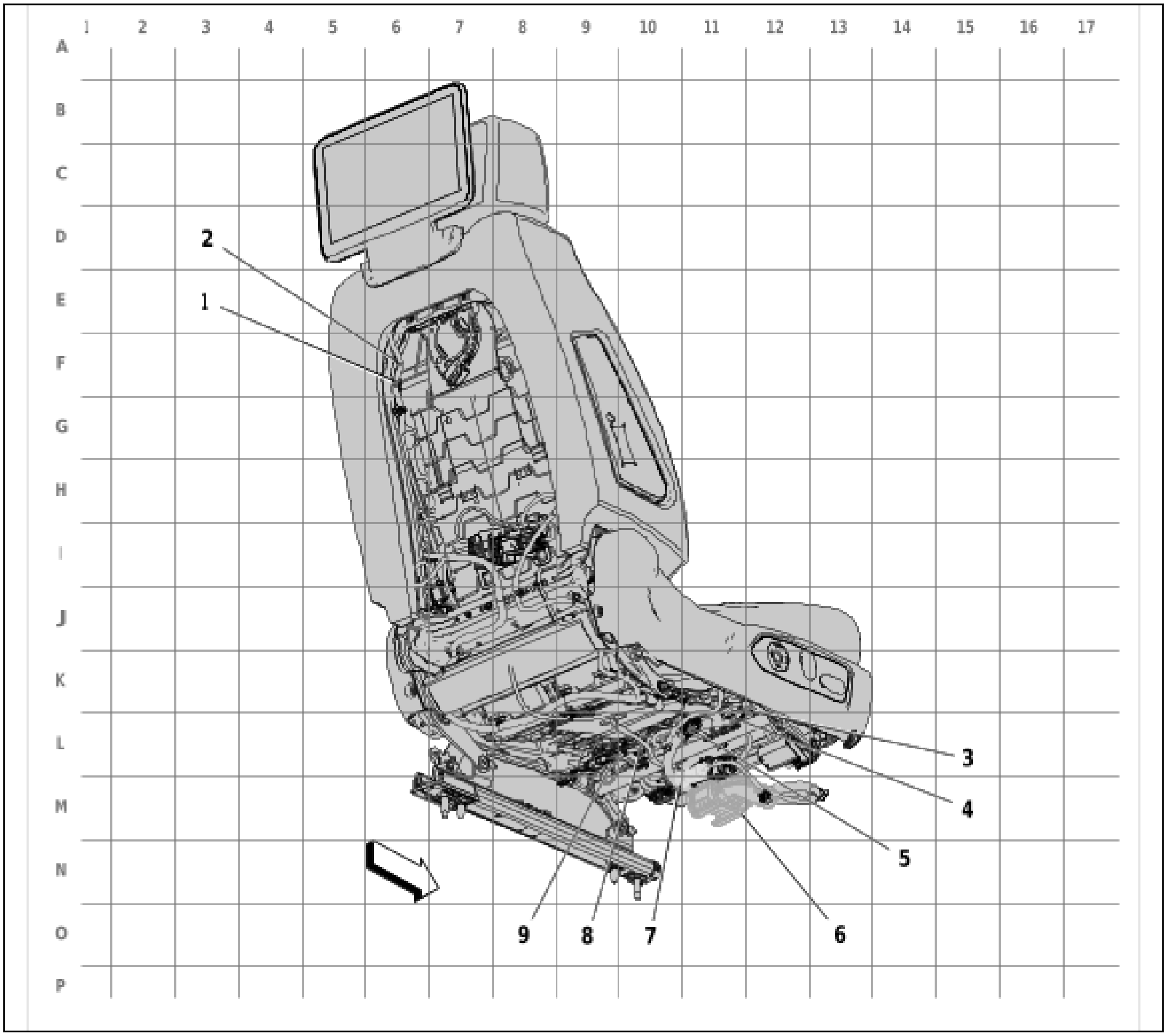


6693380

| Items |
|---|
| (1) J317 Front Seat Wiring Harness - Driver |
| (2) J311 Front Seat Wiring Harness - Driver (AL9) |
| (3) J326 Front Seat Wiring Harness - Passenger (KA1) |
| (4) J306 Front Seat Wiring Harness - Driver (UW9) |
| (5) J305 Front Seat Wiring Harness - Driver (UW9) |
| (6) J330 Front Seat Wiring Harness - Driver (KA1) |
| (7) J316 Front Seat Wiring Harness - Driver (AVK) |
| (8) J315 Front Seat Wiring Harness - Driver (KQV) |
| (9) J310 Front Seat Wiring Harness - Driver (A45 / AUN) |
| (10) X329 Body Wiring Harness to Front Seat Wiring Harness - Driver (UW9) |

| Items |
|---|
| (11) X328 Front Seat Wiring Harness - Driver to Body Wiring Harness |
| (12) J319 Front Seat Wiring Harness - Driver (KQV) |

### Front Seat Wiring Harness - Passenger Routing

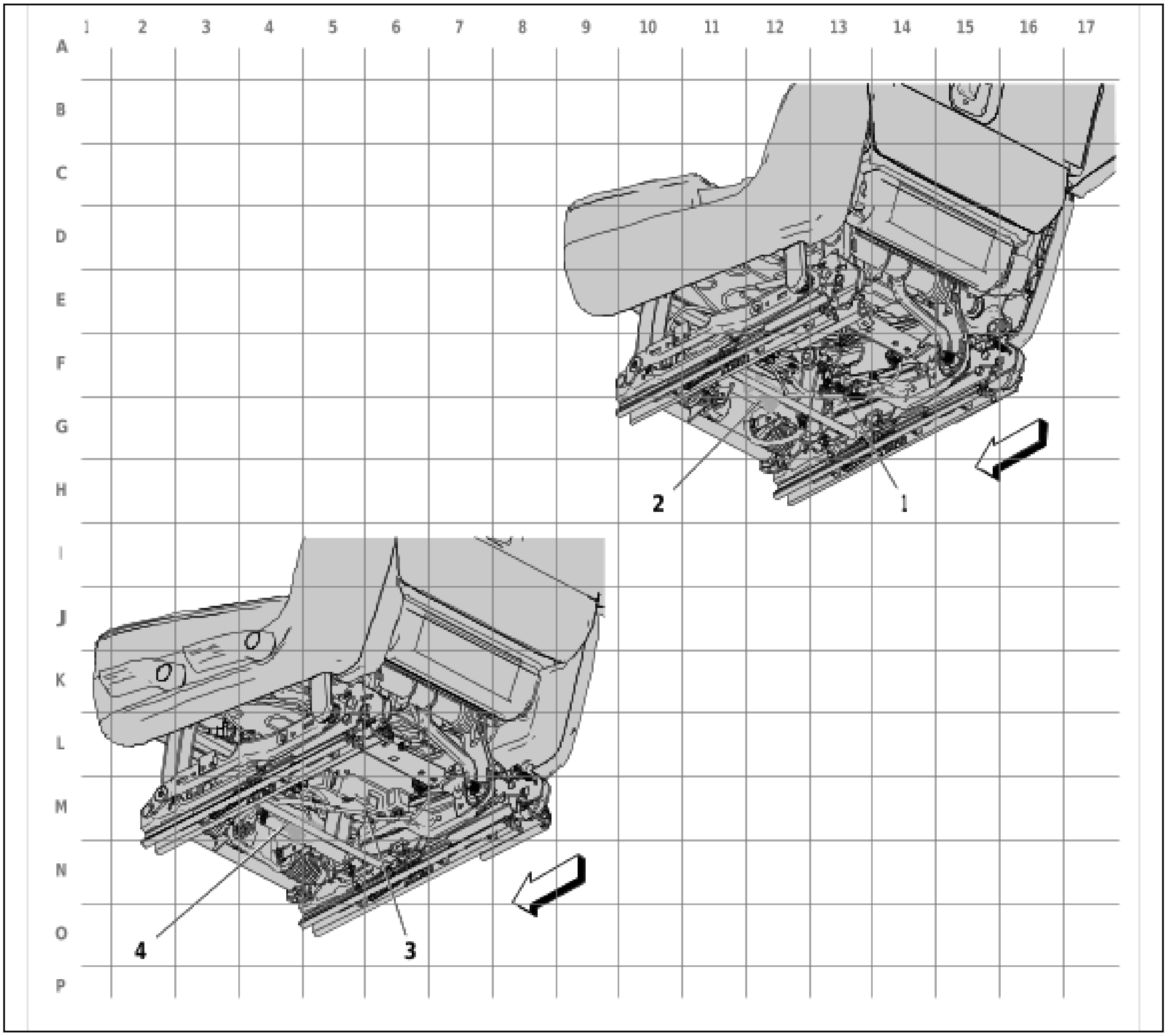


6693381

| Items |
|---|
| (1) J307 Front Seat Wiring Harness - Passenger (UW9) |
| (2) J314 Front Seat Wiring Harness - Passenger (UW9) |
| (3) J321 Front Seat Wiring Harness - Passenger |
| (4) J313 Front Seat Wiring Harness - Passenger |
| (5) J324 Front Seat Wiring Harness - Passenger (KA1) |
| (6) X333 Front Seat Wiring Harness - Passenger to Body Wiring Harness |

| Items |
|---|
| (7) X344L Body Wiring Harness to Front Seat Wiring Harness - Passenger (UW9) |
| (8) J332 Front Seat Wiring Harness - Passenger (KQV) |
| (9) J325 Front Seat Wiring Harness - Passenger (KQV) |

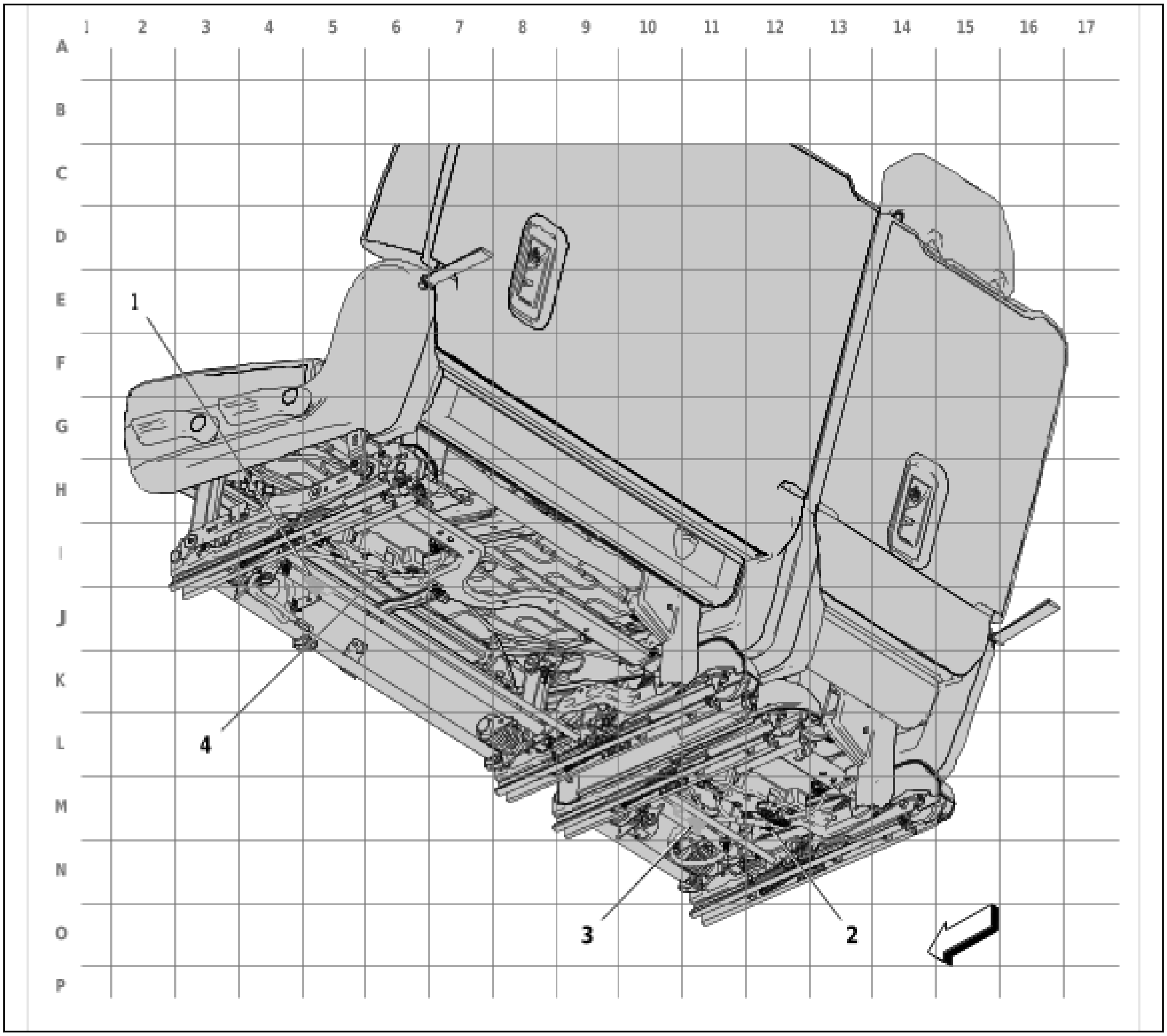
### 2nd Row Seat Wiring Harness Routing (ATN)



6690082

| Items |
|---|
| (1) J367 2nd Row Seat Wiring Harness - Right Cushion |
| (2) X344A Body Wiring Harness to 2nd Row Seat Wiring Harness - Right Cushion |
| (3) J365 2nd Row Seat Wiring Harness - Left Cushion |
| (4) X340A Body Wiring Harness to 2nd Row Seat Wiring Harness - Left Cushion |

## 2nd Row Seat Wiring Harness Routing (ATT)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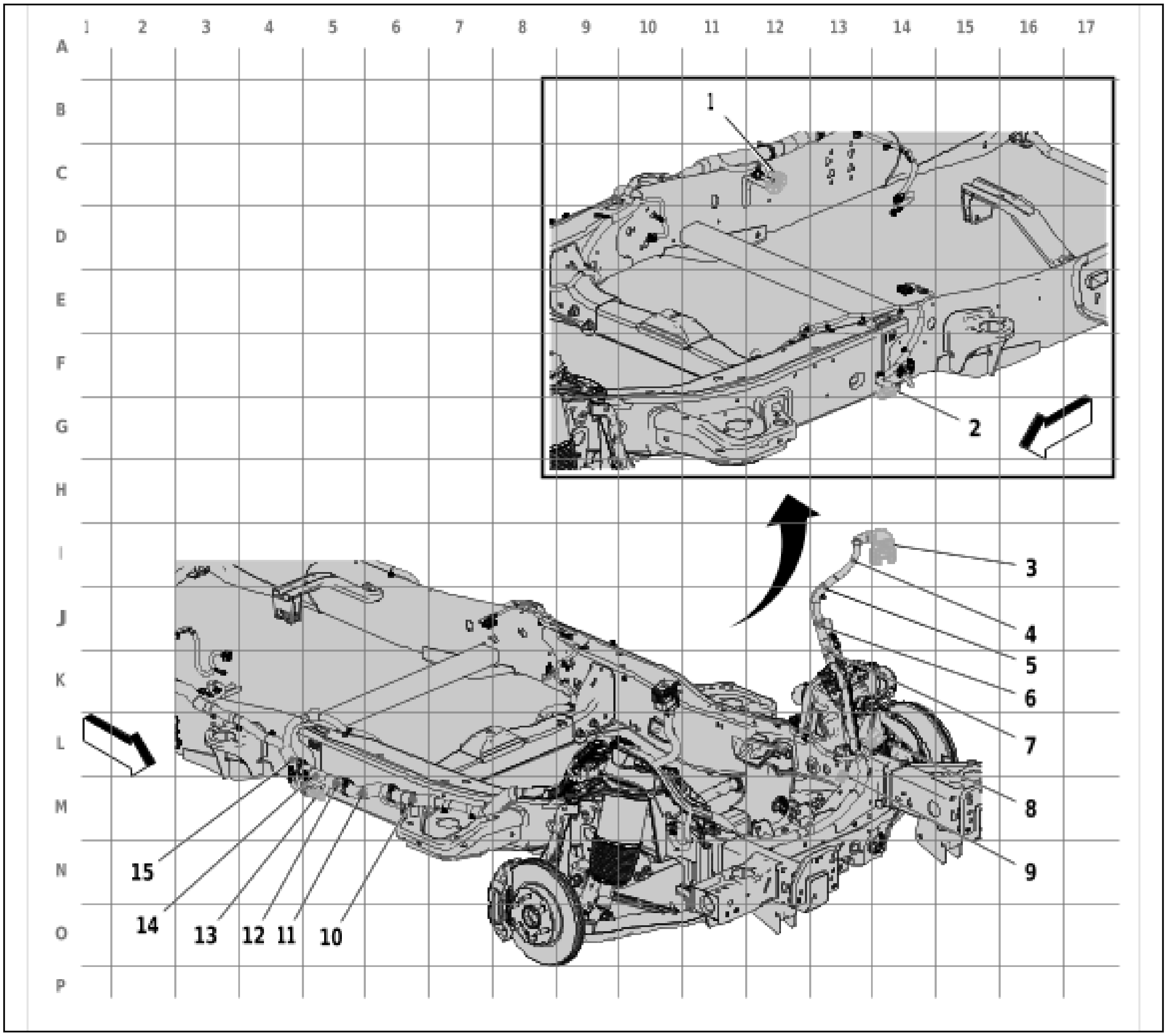
6690083

| Items |
|---|
| (1) X340A Body Wiring Harness to 2nd Row Seat Wiring Harness - Left Cushion |
| (2) J367 2nd Row Seat Wiring Harness - Right Cushion |
| (3) X344A Body Wiring Harness to 2nd Row Seat Wiring Harness - Right Cushion |
| (4) J365 2nd Row Seat Wiring Harness - Left Cushion |

## Chassis Wiring Harness - Front (LWB)

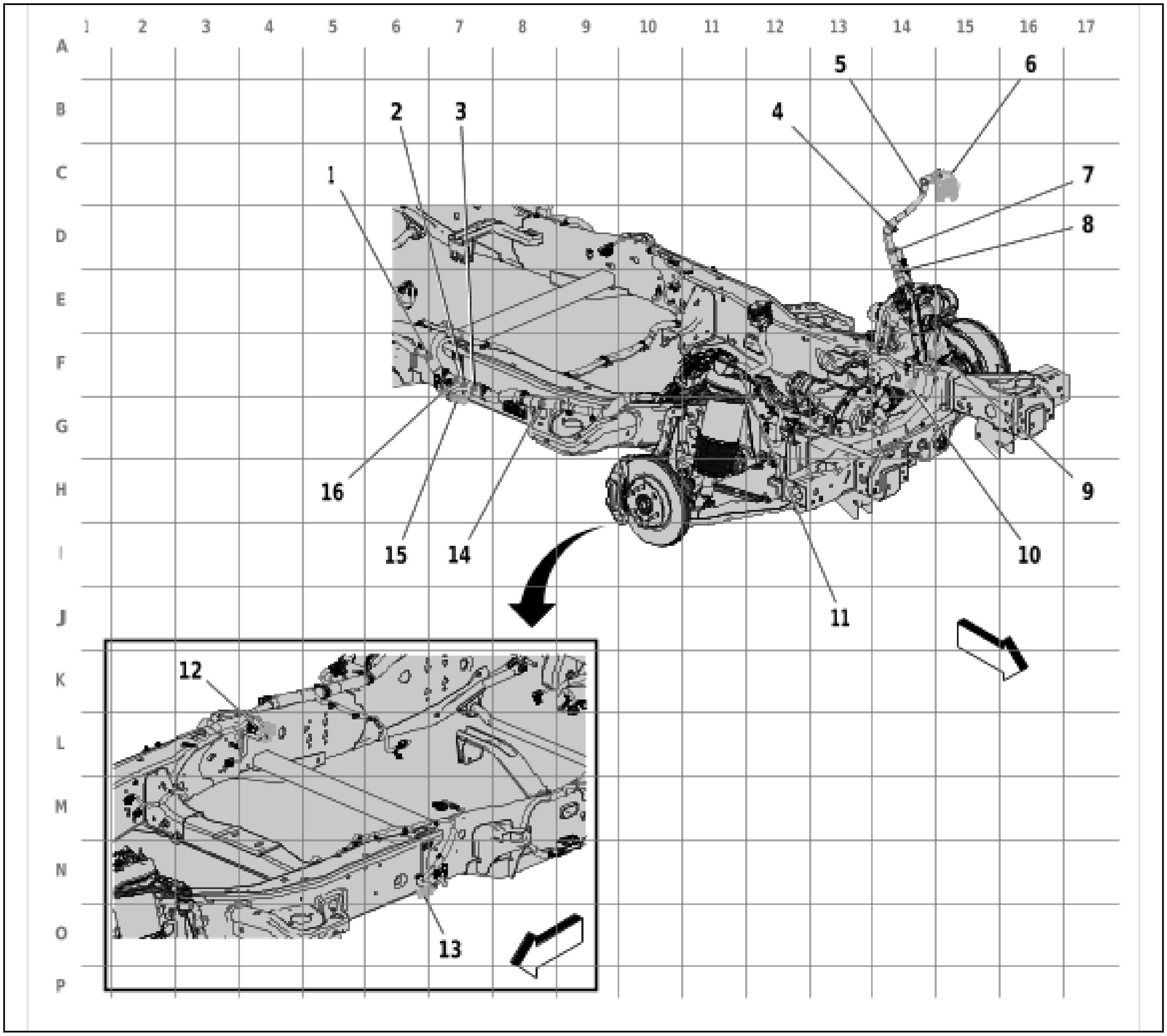


6865020

| Items |
|---|
| (1) X999 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (LZ0) |
| (2) X404L Assist Step M to Chassis Wiring Harness (B3L) |
| (3) X400 Chassis Wiring Harness to Body Wiring Harness |
| (4) J121 Chassis Wiring Harness (G96) |
| (5) J122 Chassis Wiring Harness (G96) |
| (6) J123 Chassis Wiring Harness (G96) |
| (7) J187 Chassis Wiring Harness (- JJ1) |
| (8) X403 Engine Wiring Harness to Chassis Wiring Harness |
| (9) X405D Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness |
| (10) J372 Chassis Wiring Harness |
| (11) J377 Chassis Wiring Harness (LZ0) |

| Items |
|---|
| (12) J371 Chassis Wiring Harness |
| (13) X404R Assist Step M to Chassis Wiring Harness (B3L) |
| (14) J379 Chassis Wiring Harness |
| (15) J378 Chassis Wiring Harness (LZ0) |

### Chassis Wiring Harness - Front (SWB)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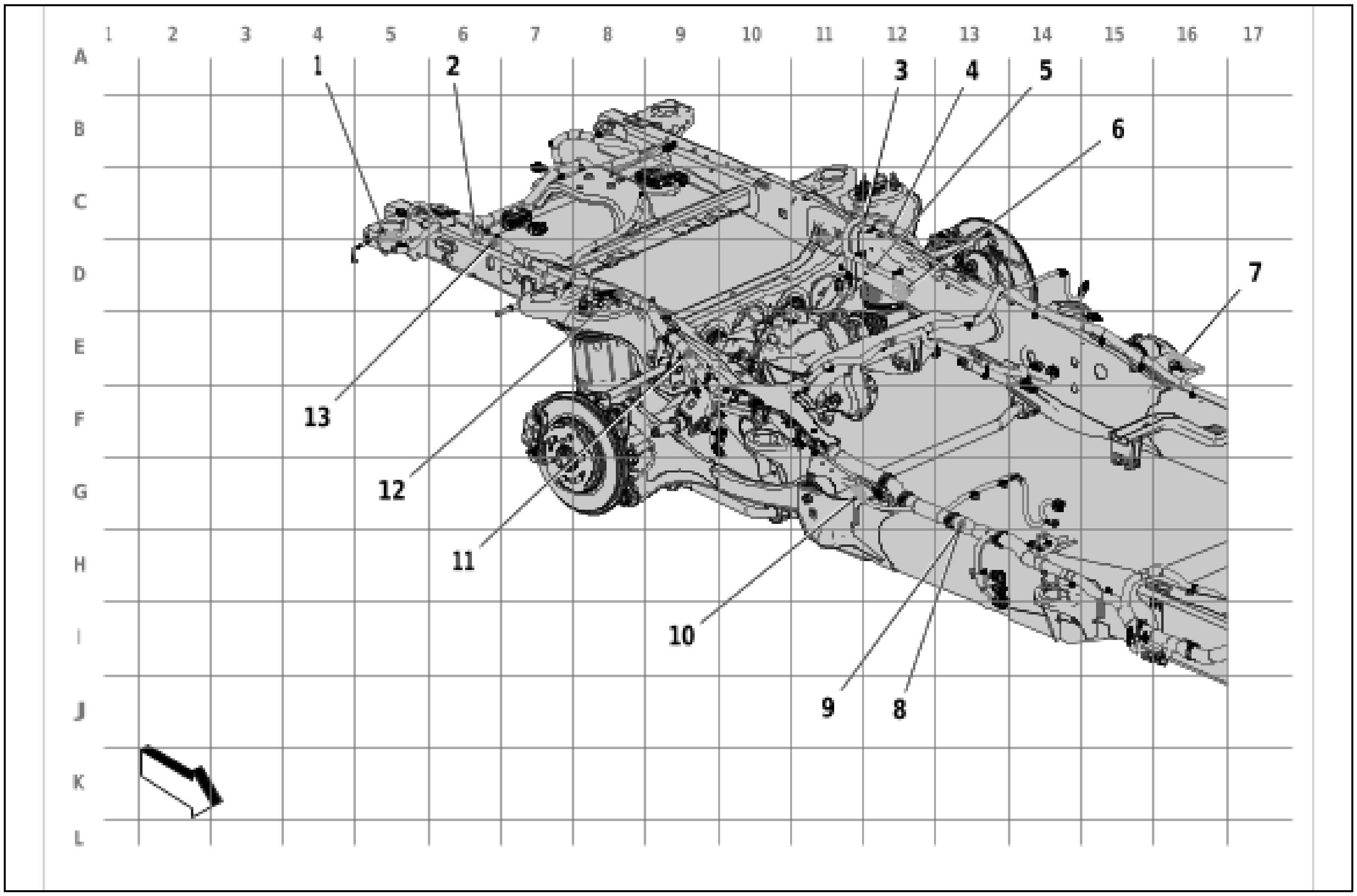
6865021

| Items |
|---|
| (1) J387 Chassis Wiring Harness |
| (2) J379 Chassis Wiring Harness |
| (3) J371 Chassis Wiring Harness |
| (4) J122 Chassis Wiring Harness (G96) |
| (5) J121 Chassis Wiring Harness (G96) |
| (6) X400 Chassis Wiring Harness to Body Wiring Harness |

| Items |
|---|
| (7) J123 Chassis Wiring Harness (G96) |
| (8) J187 Chassis Wiring Harness (- JJ1) |
| (9) X403 Engine Wiring Harness to Chassis Wiring Harness |
| (10) X405D Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness |
| (11) J378 Chassis Wiring Harness (LZ0) |
| (12) X999 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (LZ0) |
| (13) X404L Assist Step M to Chassis Wiring Harness (B3L) |
| (14) J372 Chassis Wiring Harness |
| (15) X404R Assist Step M to Chassis Wiring Harness (B3L) |
| (16) J377 Chassis Wiring Harness (LZ0) |

### Chassis Wiring Harness - Rear (LWB)

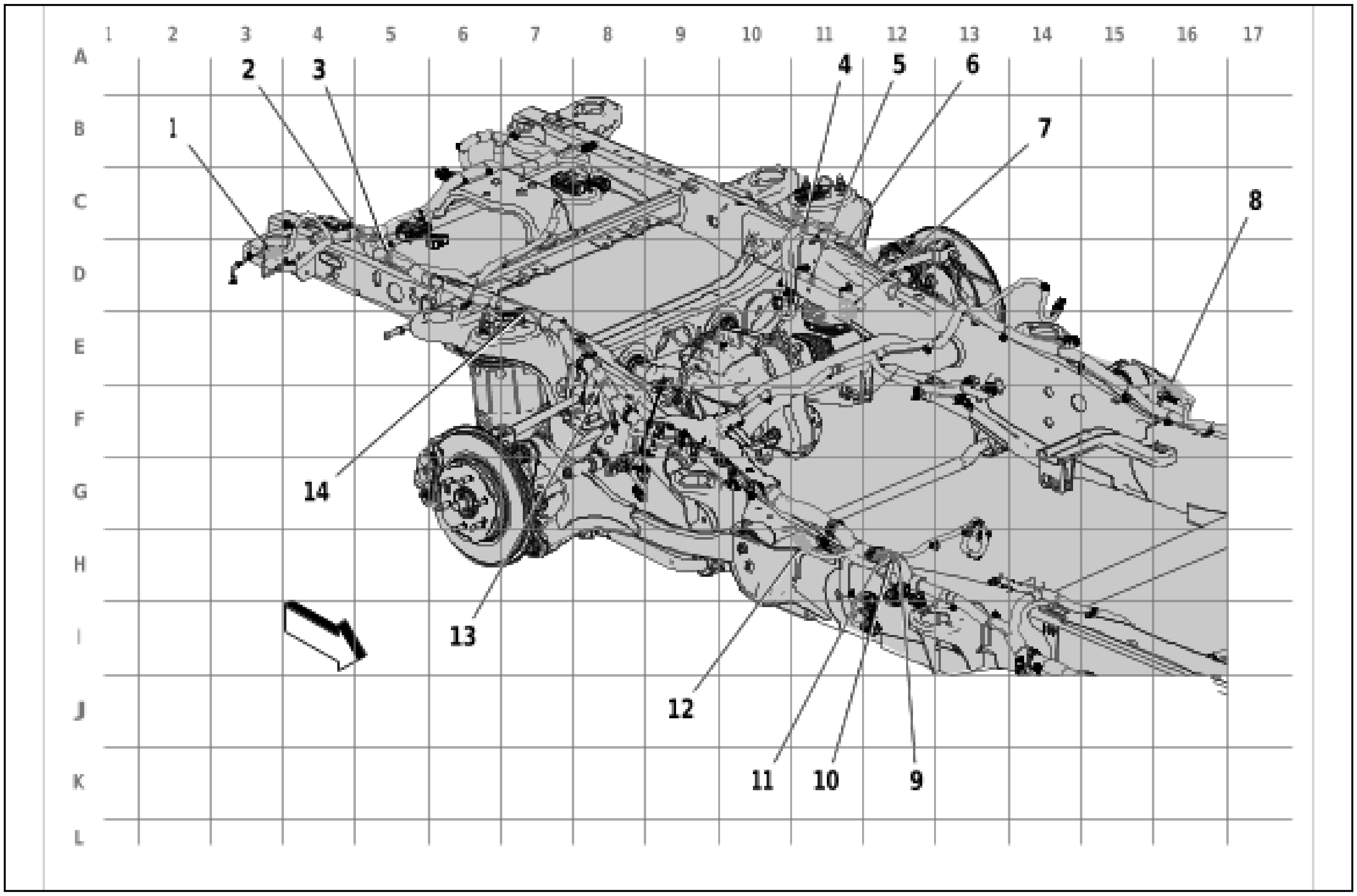


6865022

| Items |
|---|
| (1) X402 Chassis Wiring Harness to Body Wiring Harness |
| (2) J455 Chassis Wiring Harness (JL1) |
| (3) J462 Body Wiring Harness (G96) |
| (4) J463 Body Wiring Harness (G96) |
| (5) J461 Body Wiring Harness (G96) |
| (6) X415R Chassis Wiring Harness to Differential Carrier Lock Wiring Harness (G96) |

| Items |
|---|
| (7) X904L Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Left |
| (8) J373 Chassis Wiring Harness (LZ0) |
| (9) J374 Chassis Wiring Harness (LZ0) |
| (10) X904R Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Right |
| (11) J450 Chassis Wiring Harness |
| (12) J451 Chassis Wiring Harness |
| (13) J454 Chassis Wiring Harness |

### Chassis Wiring Harness - Rear (SWB)

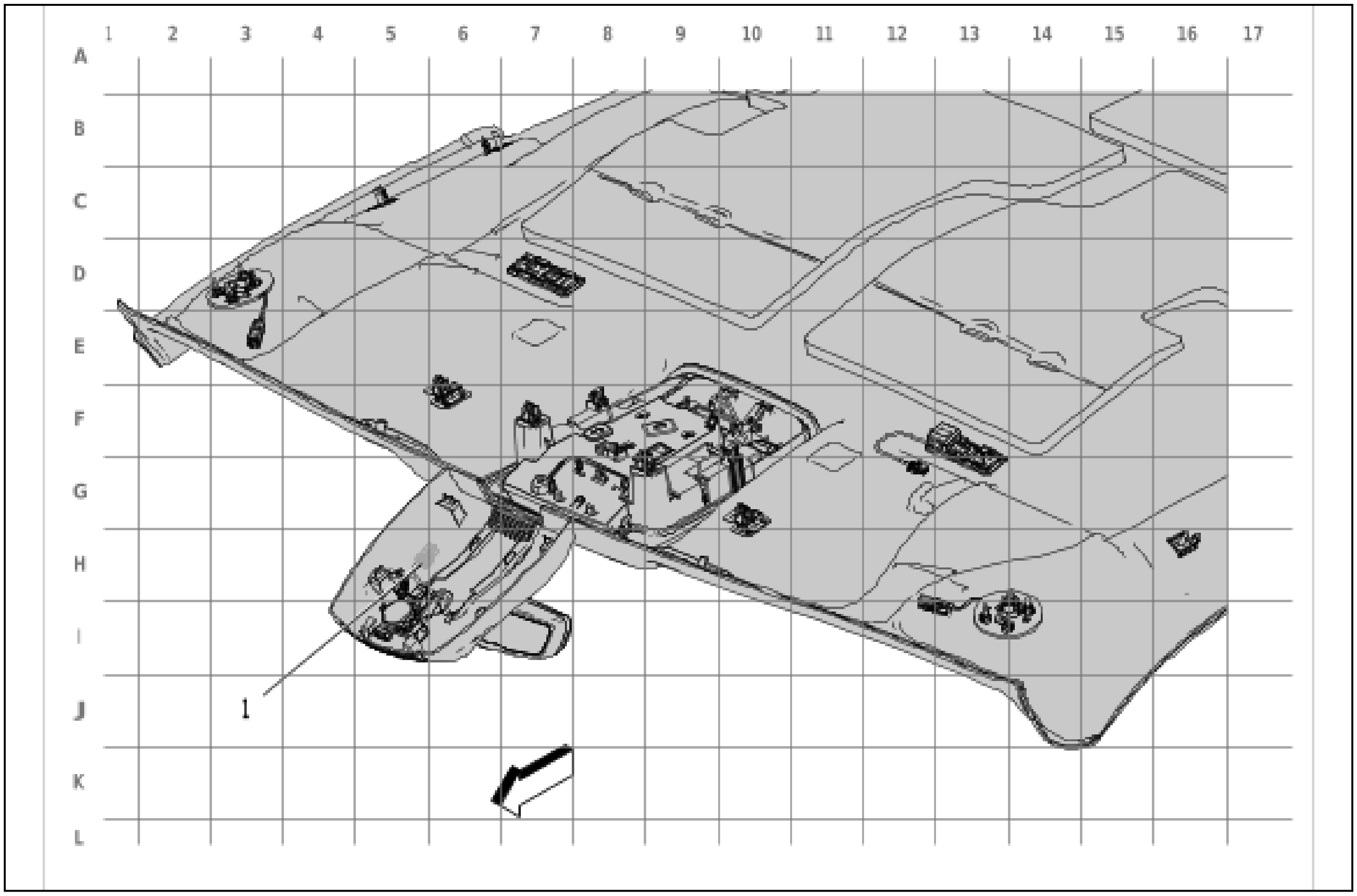


6865023

| Items |
|---|
| (1) X402 Chassis Wiring Harness to Body Wiring Harness |
| (2) J455 Chassis Wiring Harness (JL1) |
| (3) J454 Chassis Wiring Harness |
| (4) J462 Body Wiring Harness (G96) |
| (5) J461 Body Wiring Harness (G96) |
| (6) J463 Body Wiring Harness (G96) |
| (7) X415R Chassis Wiring Harness to Differential Carrier Lock Wiring Harness (G96) |
| (8) X904L Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Left |
| (9) J374 Chassis Wiring Harness (LZ0) |

| Items |
|---|
| (10) J373 Chassis Wiring Harness (LZ0) |
| (11) J387 Chassis Wiring Harness |
| (12) X904R Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Right |
| (13) J450 Chassis Wiring Harness |
| (14) J451 Chassis Wiring Harness |

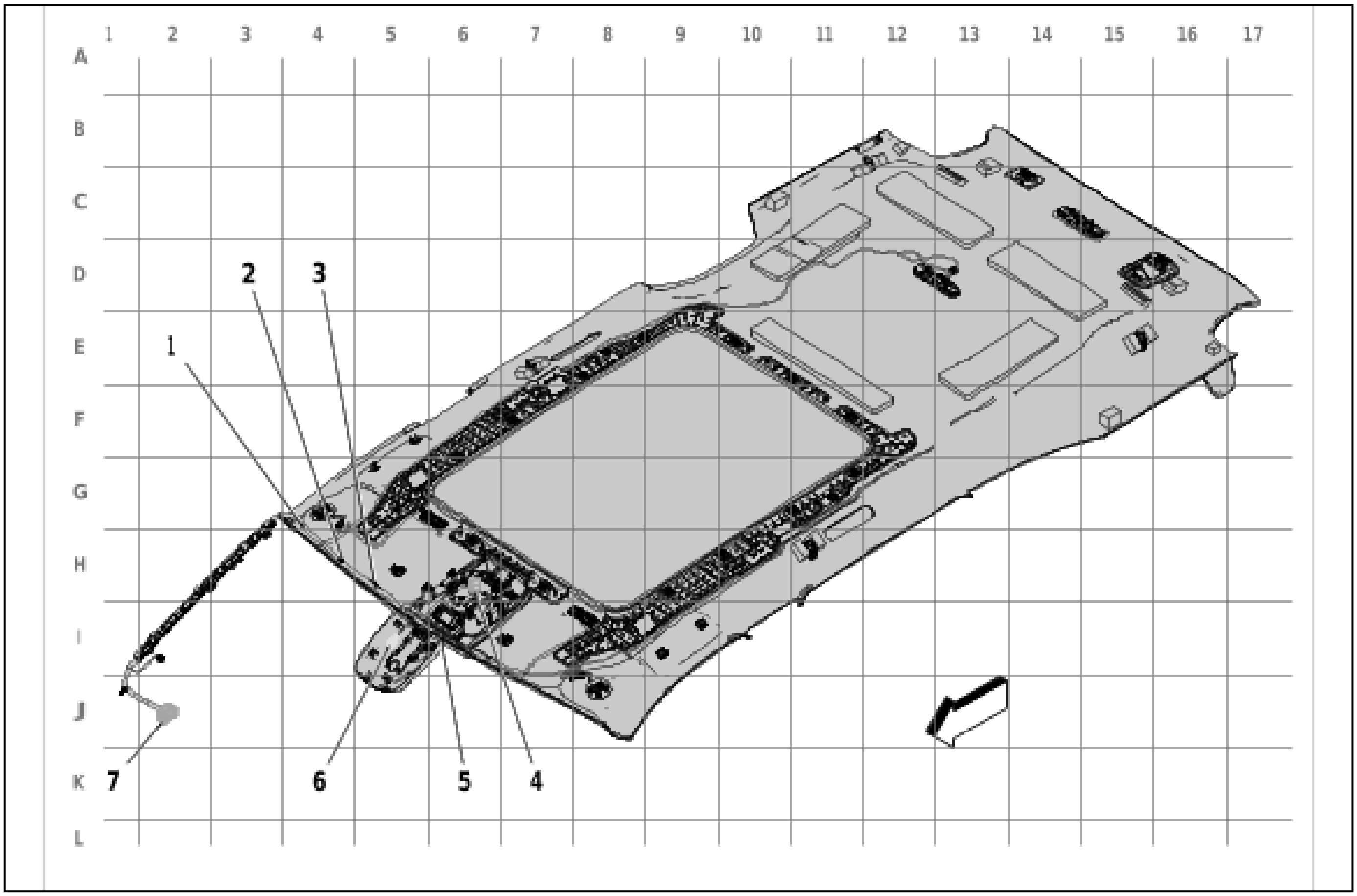
### Headlamp Automatic Control Ambient Light Sensor Wiring Harness Routing



6678293

| Items |
|---|
| (1) X370B Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Headlining Trim Panel Harness |

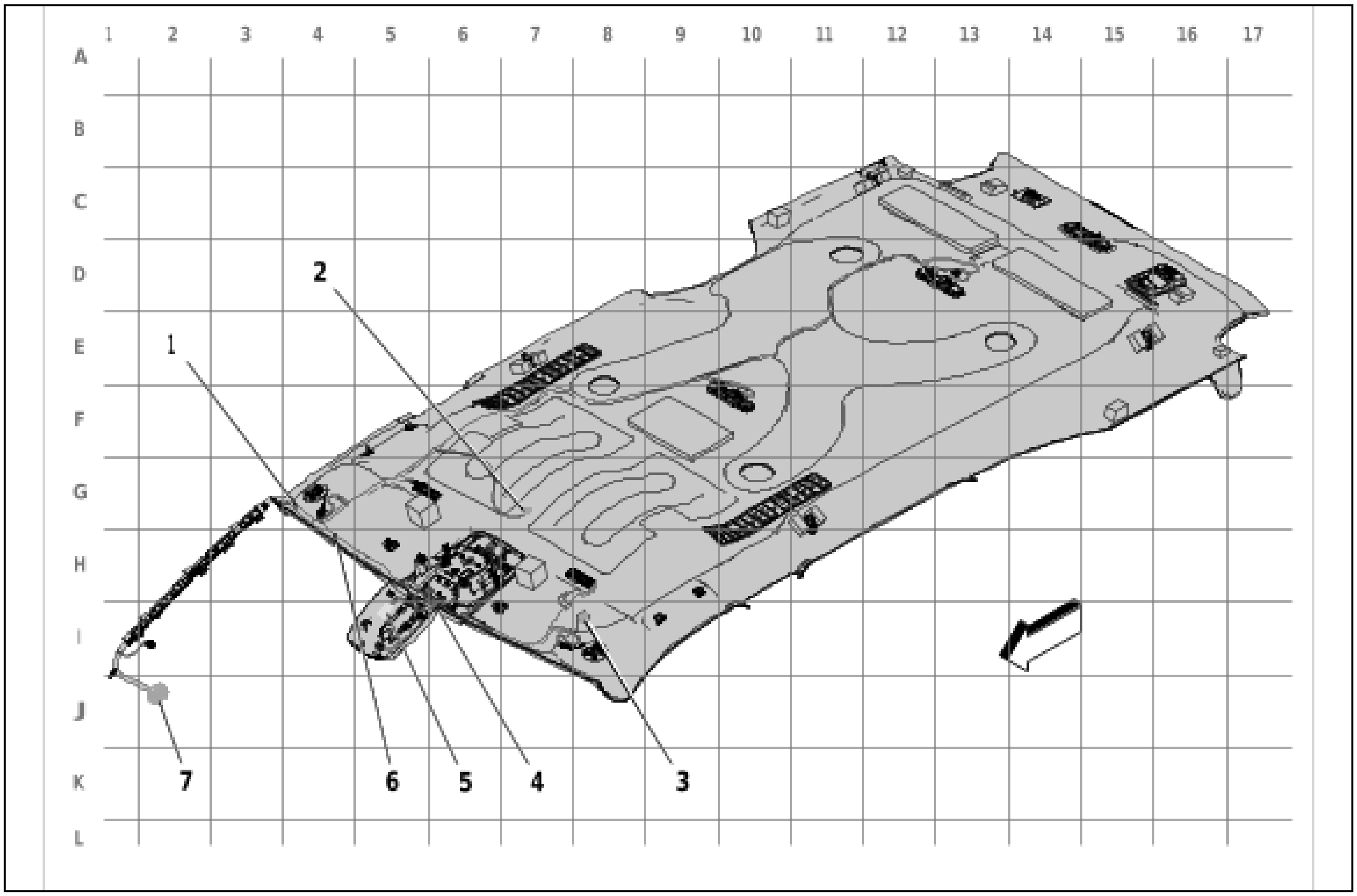
## Headlining Trim Panel Harness (C3U)



6676708

| Items |
|---|
| (1) J383 Headlining Trim Panel Harness |
| (2) J381 Headlining Trim Panel Harness |
| (3) J382 Headlining Trim Panel Harness (C3U) |
| (4) X375 Sunroof Wiring Harness to Headlining Trim Panel Harness (C3U) |
| (5) J318 Headlining Trim Panel Harness |
| (6) X370B Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Headlining Trim Panel Harness |
| (7) X370A Headlining Trim Panel Harness to Instrument Panel Wiring Harness |

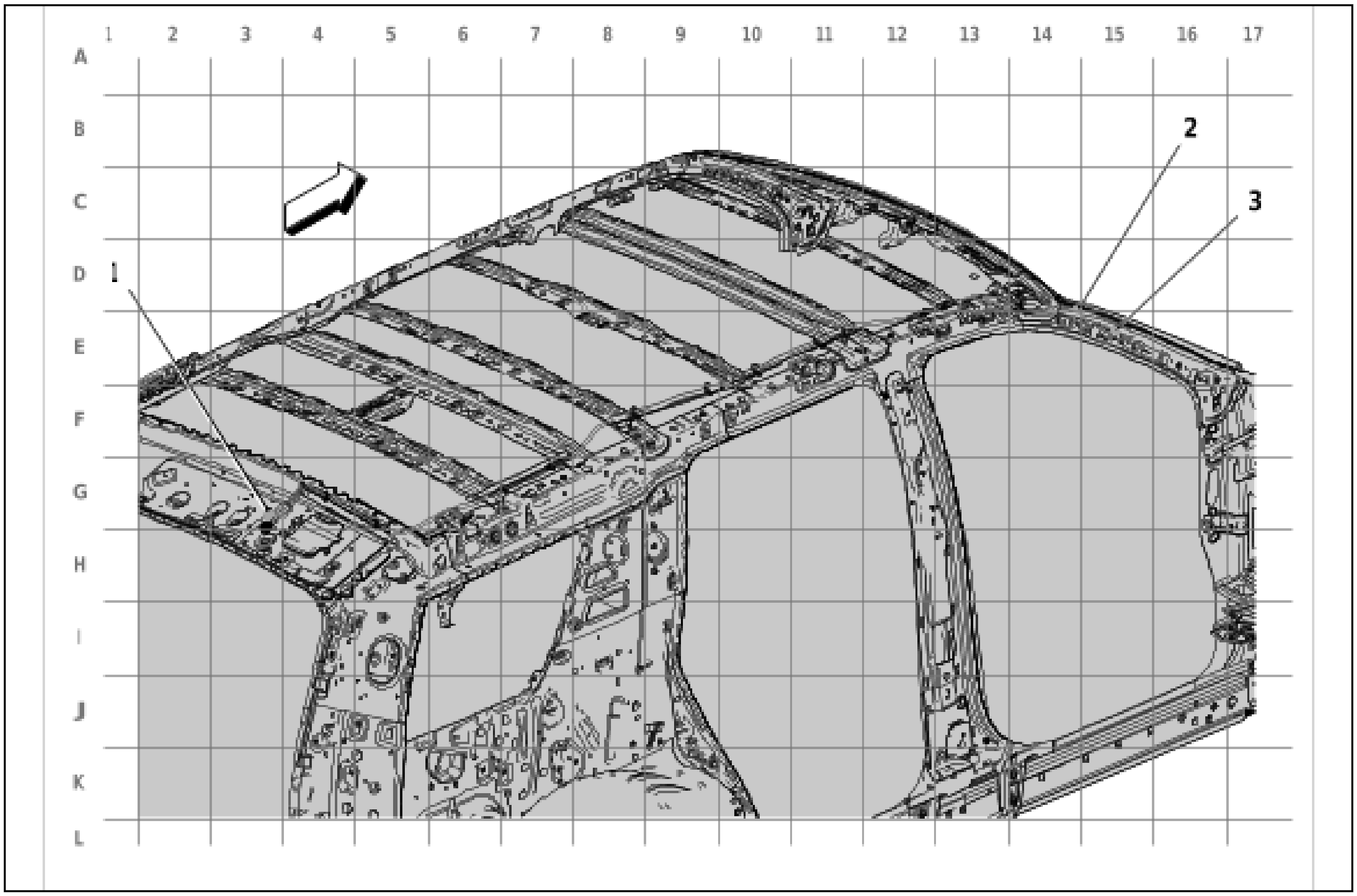
## Headlining Trim Panel Harness (- C3U)



6676709

| Items |
|---|
| (1) J383 Headlining Trim Panel Harness |
| (2) X385 Headlining Trim Panel Harness to Police Accessories Wiring Harness (5W4 / 9C1) |
| (3) X372 Headlining Trim Panel Harness to Police Accessories Wiring Harness (5W4 / 9C1) |
| (4) J318 Headlining Trim Panel Harness |
| (5) X370B Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Headlining Trim Panel Harness |
| (6) J381 Headlining Trim Panel Harness |
| (7) X370A Headlining Trim Panel Harness to Instrument Panel Wiring Harness |

## Antenna Coaxial Cable Routing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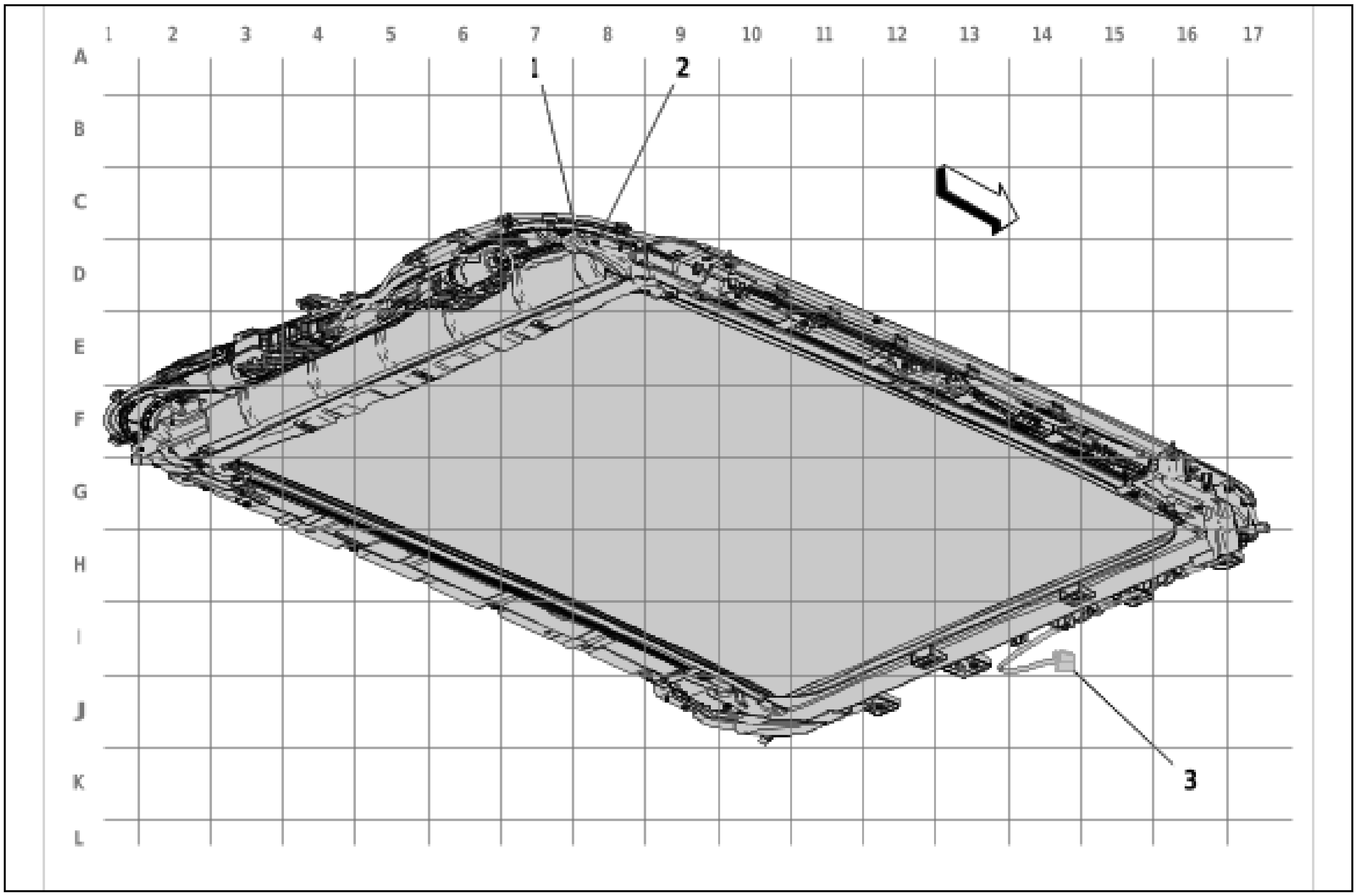
6678514

| Items |
|---|
| (1) X996 Antenna Coaxial Cable to Antenna Coaxial Cable Jumper (DRZ) |
| (2) X396 Instrument Panel Wiring Harness to Antenna Wiring Harness |
| (3) X397 Instrument Panel Wiring Harness to Antenna Wiring Harness (U2Q) |

## Sunroof Wiring Harness Routing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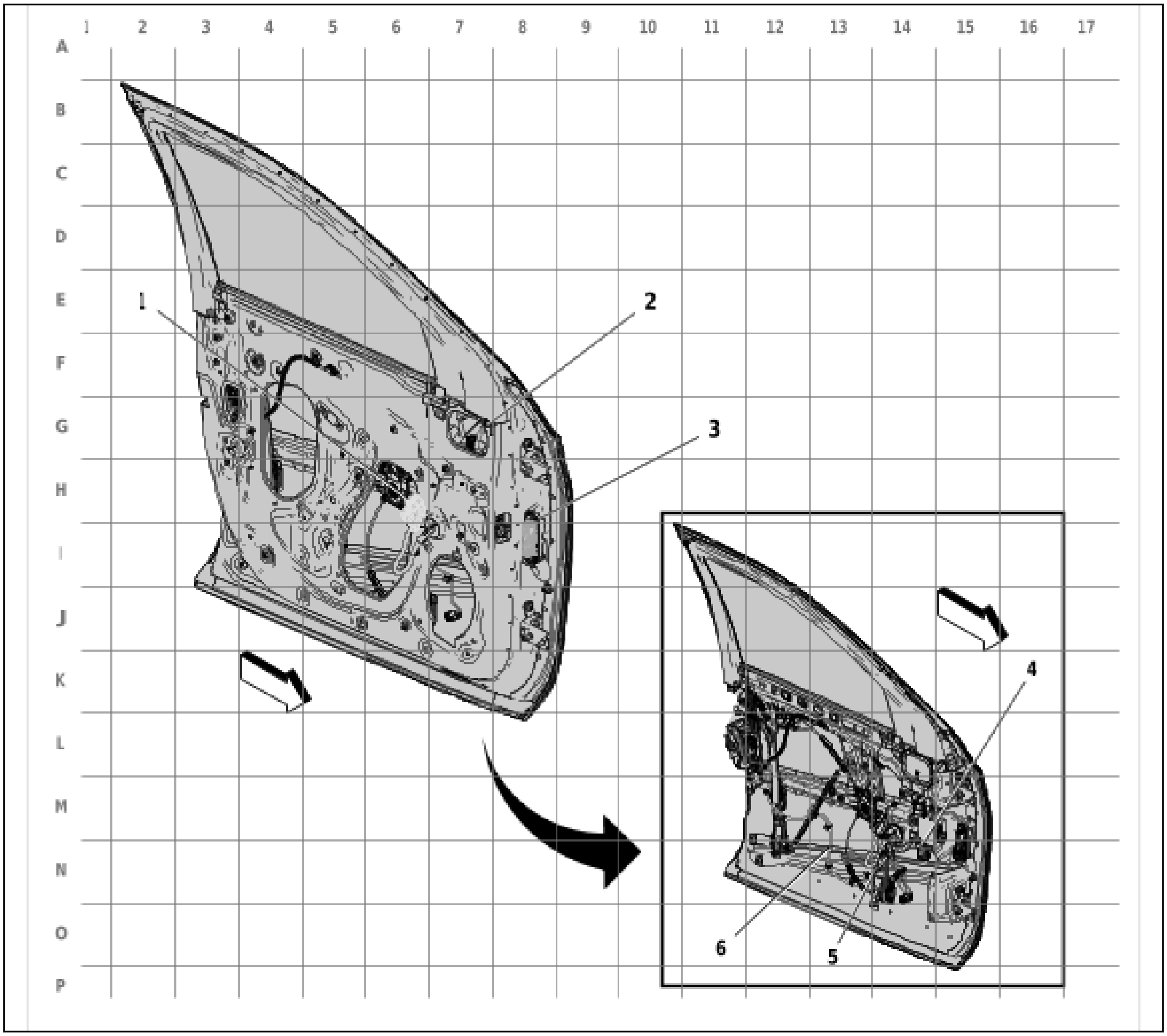
6678294

| Items |
|---|
| (1) J384 Sunroof Wiring Harness (C3U) |
| (2) J385 Sunroof Wiring Harness (C3U) |
| (3) X375 Sunroof Wiring Harness to Headlining Trim Panel Harness (C3U) |

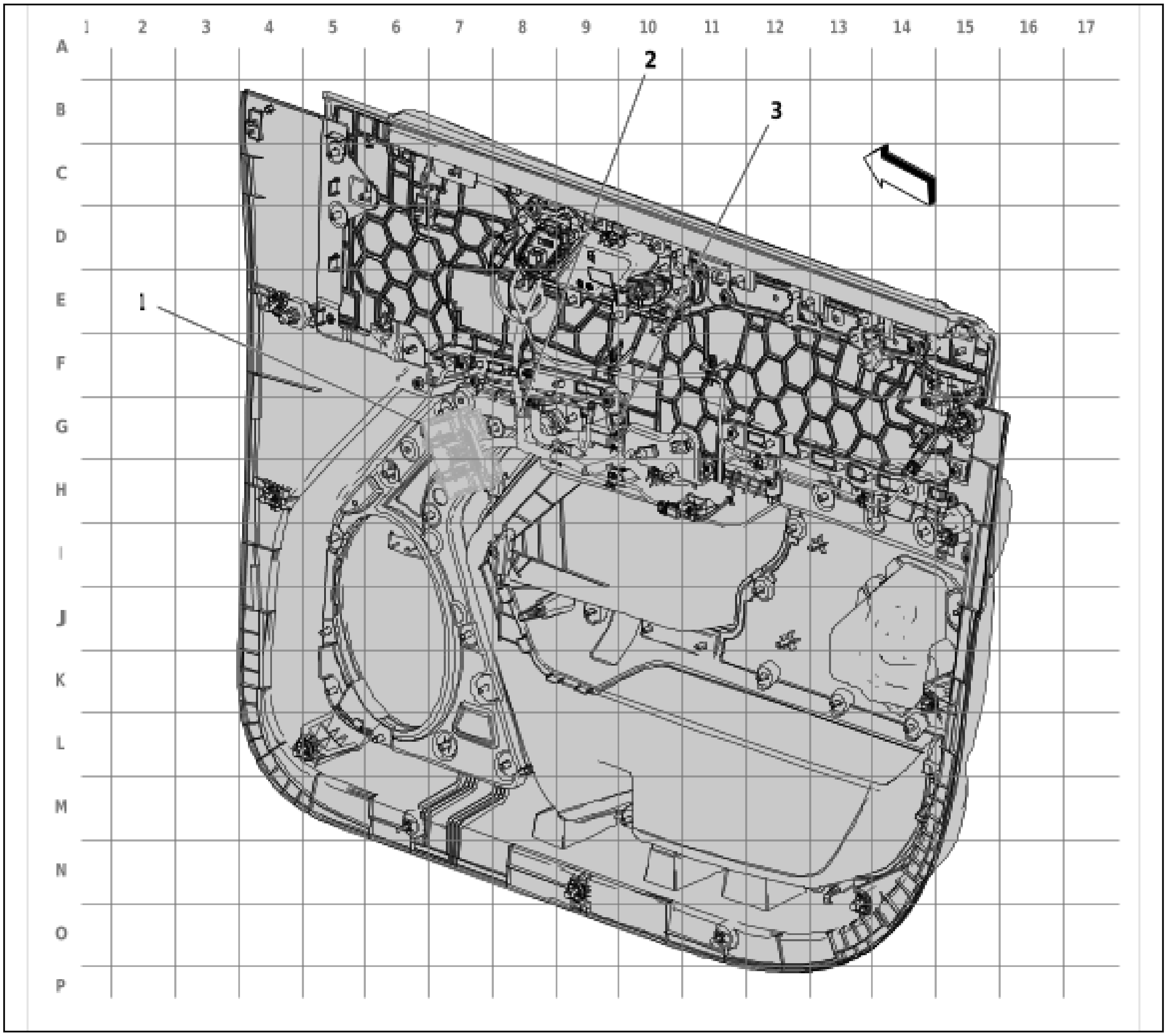
### Front Side Door Door Wiring Harness - Driver Routing



6682043

| Items |
|---|
| (1) X505 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver |
| (2) W15DL Blunt Cut - Strobe Lamps Left Front Door (5W4 / 9C1) |
| (3) X500 Front Side Door Door Wiring Harness - Driver to Body Wiring Harness |
| (4) J500 Front Side Door Door Wiring Harness - Driver |
| (5) J510 Front Side Door Door Wiring Harness - Driver |
| (6) J502 Front Side Door Door Wiring Harness - Driver |

## Front Side Door Door Lock Door Wiring Harness - Driver Routing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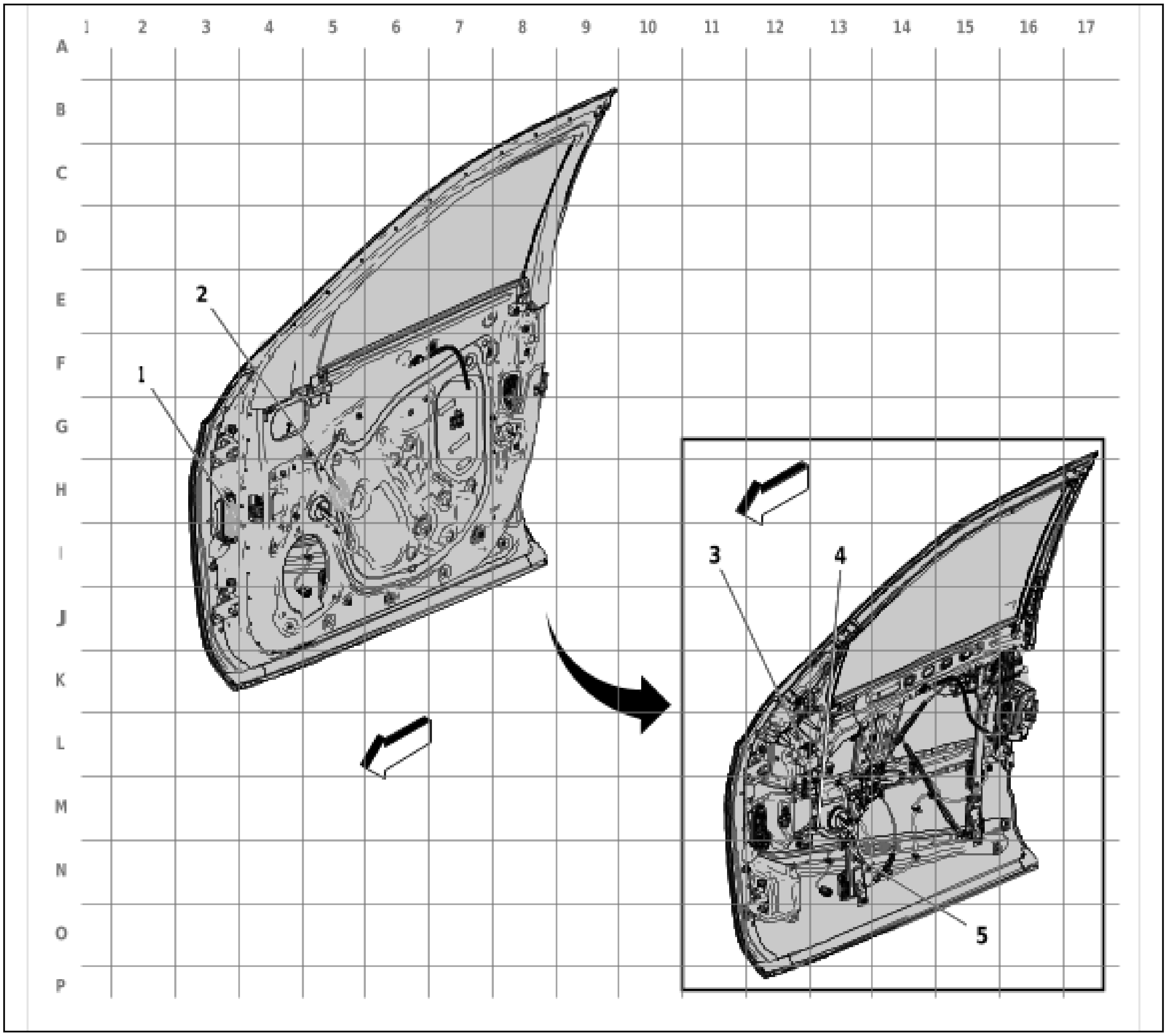
6678515

| Items |
|---|
| (1) X505 Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver |
| (2) J505 Front Side Door Door Lock Door Wiring Harness - Driver |
| (3) J507 Front Side Door Door Lock Door Wiring Harness - Driver |

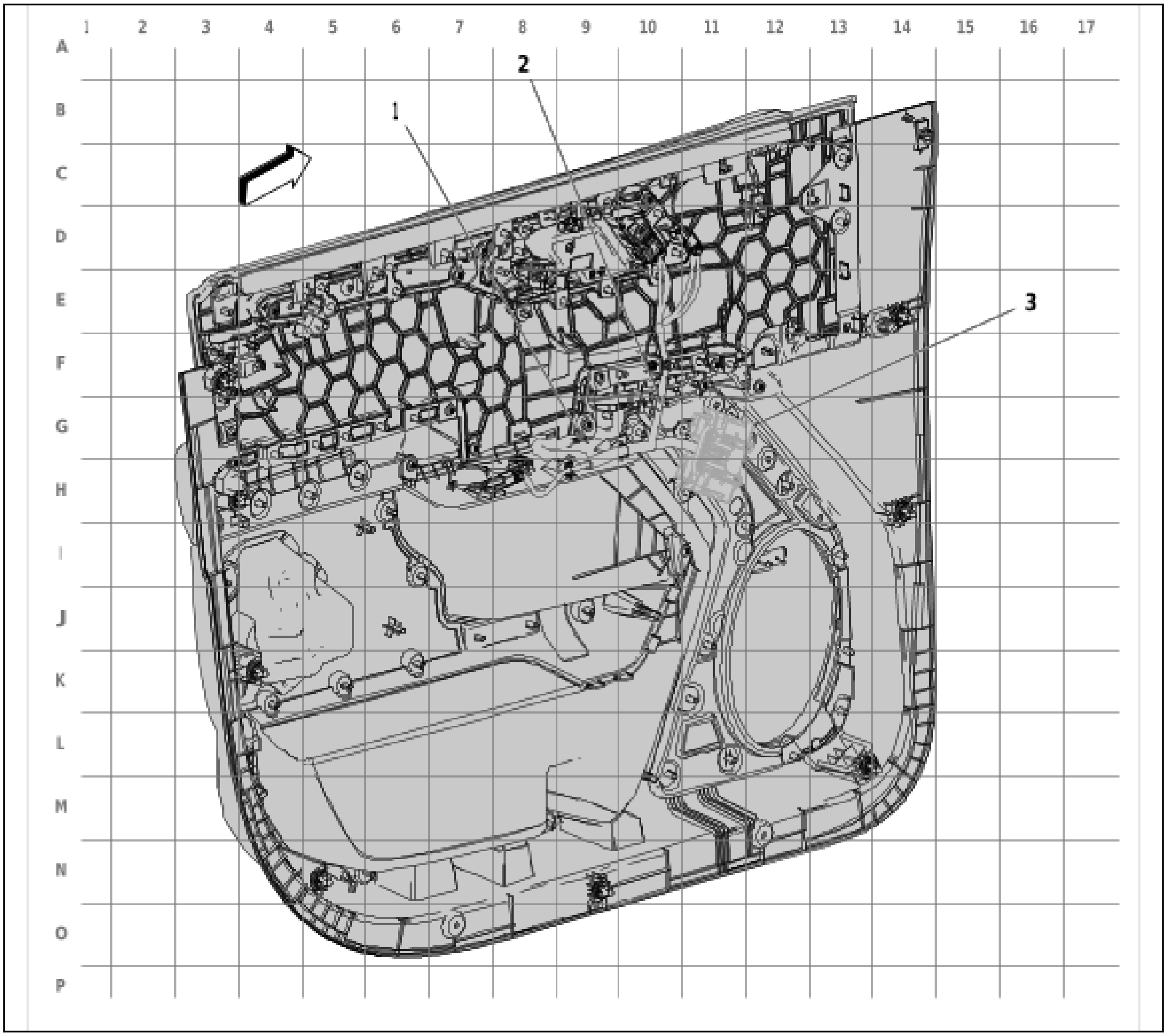
### Front Side Door Door Wiring Harness - Passenger Routing



6682044

| Items |
|---|
| (1) X600 Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness |
| (2) X605 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger |
| (3) W15DR Blunt Cut - Strobe Lamps Right Front Door (5W4 / 9C1) |
| (4) J609 Front Side Door Door Wiring Harness - Passenger |
| (5) J601 Front Side Door Door Wiring Harness - Passenger |

## Front Side Door Door Lock Door Wiring Harness - Passenger Routing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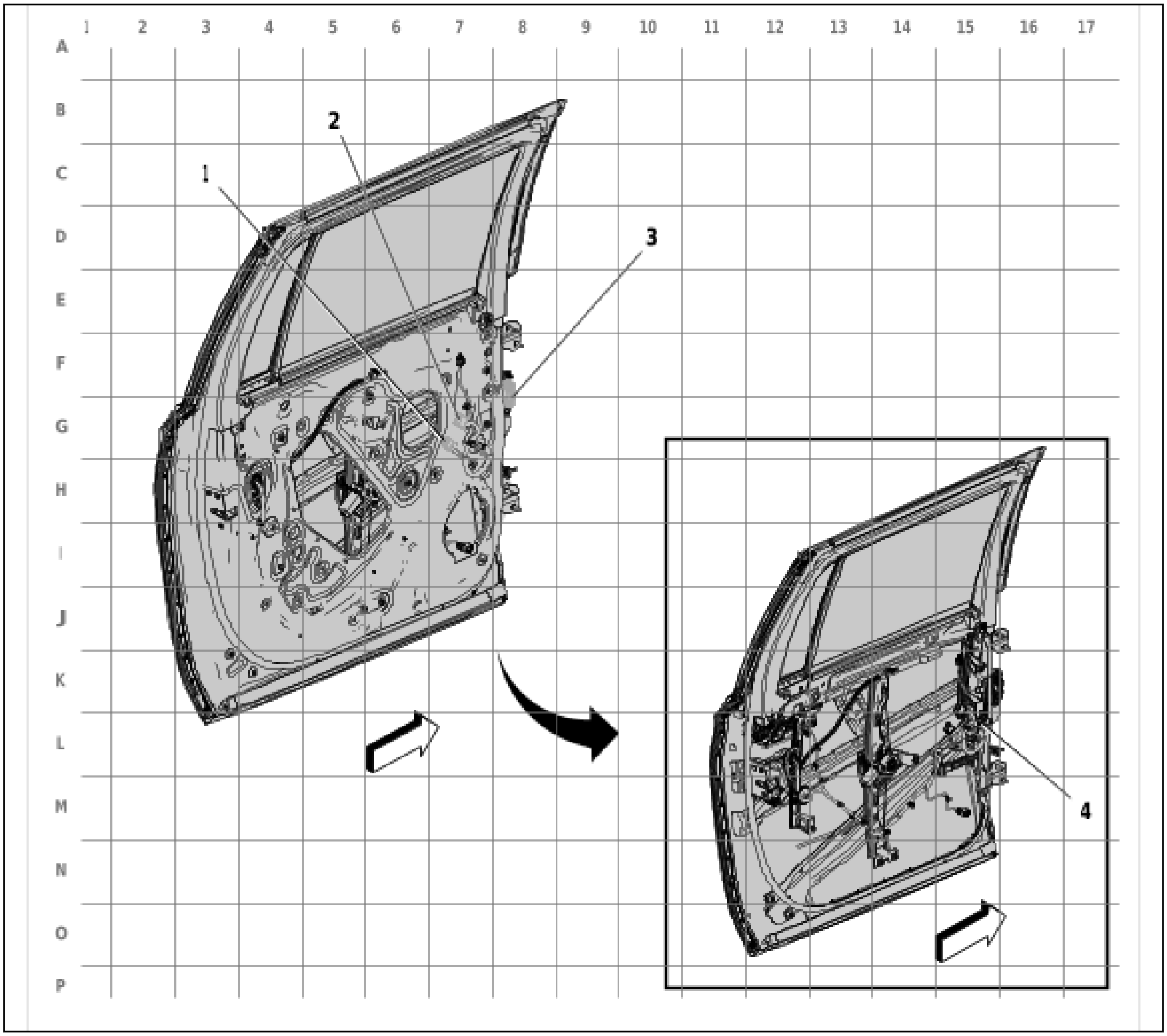
6678516

| Items |
|---|
| (1) J606 Front Side Door Door Lock Door Wiring Harness - Passenger |
| (2) J605 Front Side Door Door Lock Door Wiring Harness - Passenger |
| (3) X605 Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger |

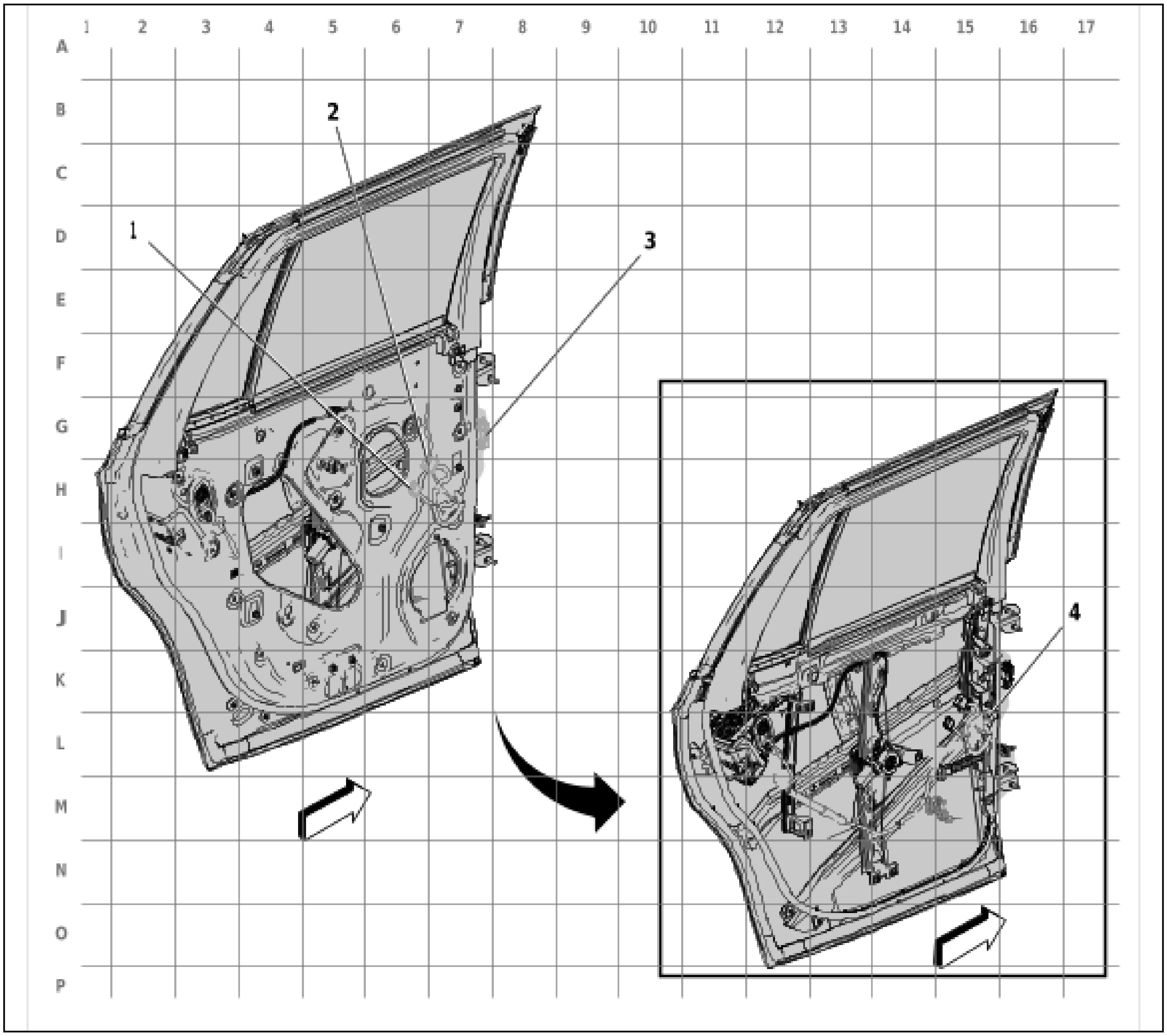
### Rear Side Door Door Wiring Harness - Left Routing (LWB)



6682045

| Items |
|---|
| (1) X705 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left |
| (2) X706 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left |
| (3) X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness |
| (4) J702 Rear Side Door Door Wiring Harness - Left |

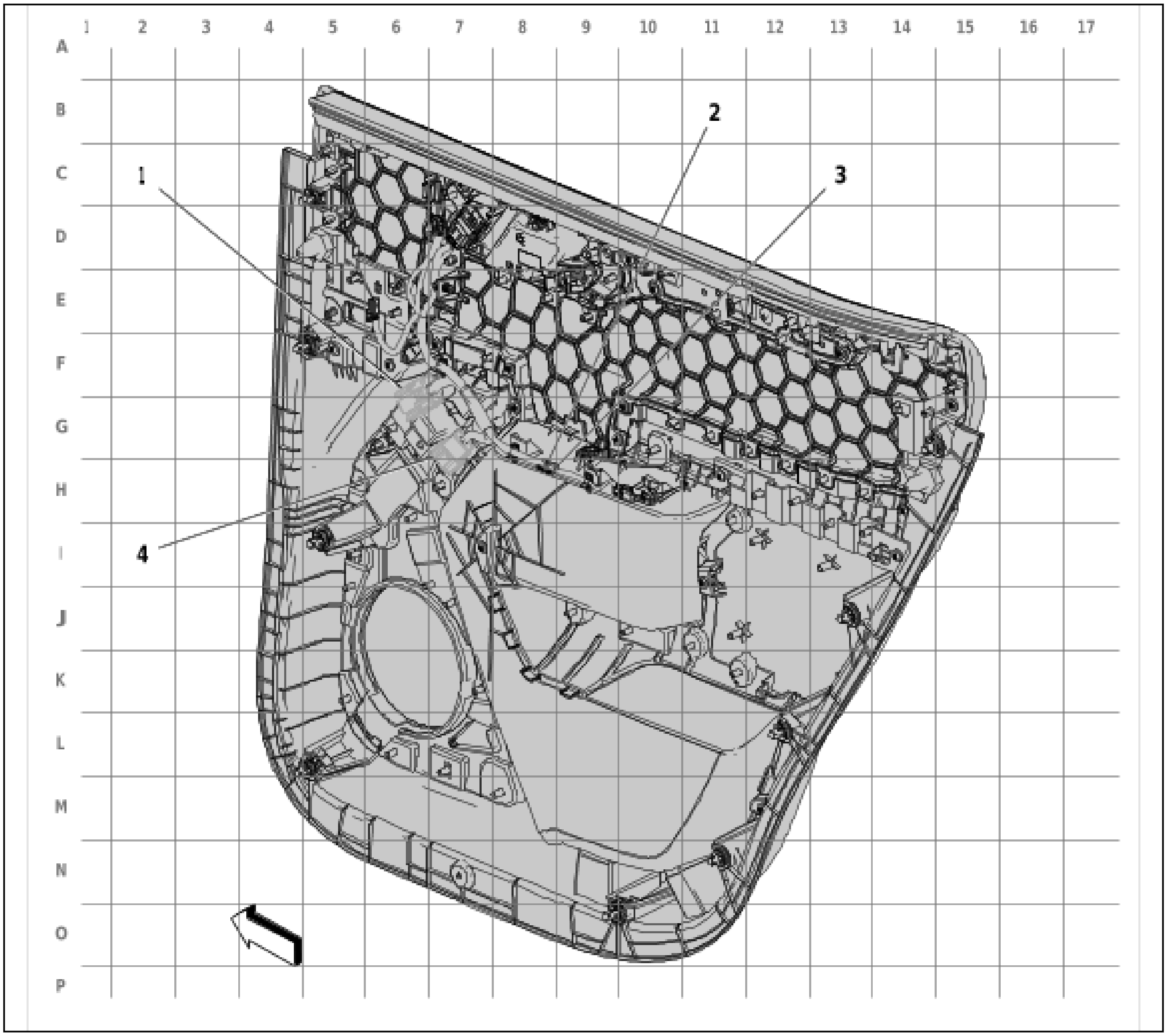
## Rear Side Door Door Wiring Harness - Left Routing (SWB)



6682046

| Items |
|---|
| (1) X705 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left |
| (2) X706 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left |
| (3) X700 Rear Side Door Door Wiring Harness - Left to Body Wiring Harness |
| (4) J702 Rear Side Door Door Wiring Harness - Left |

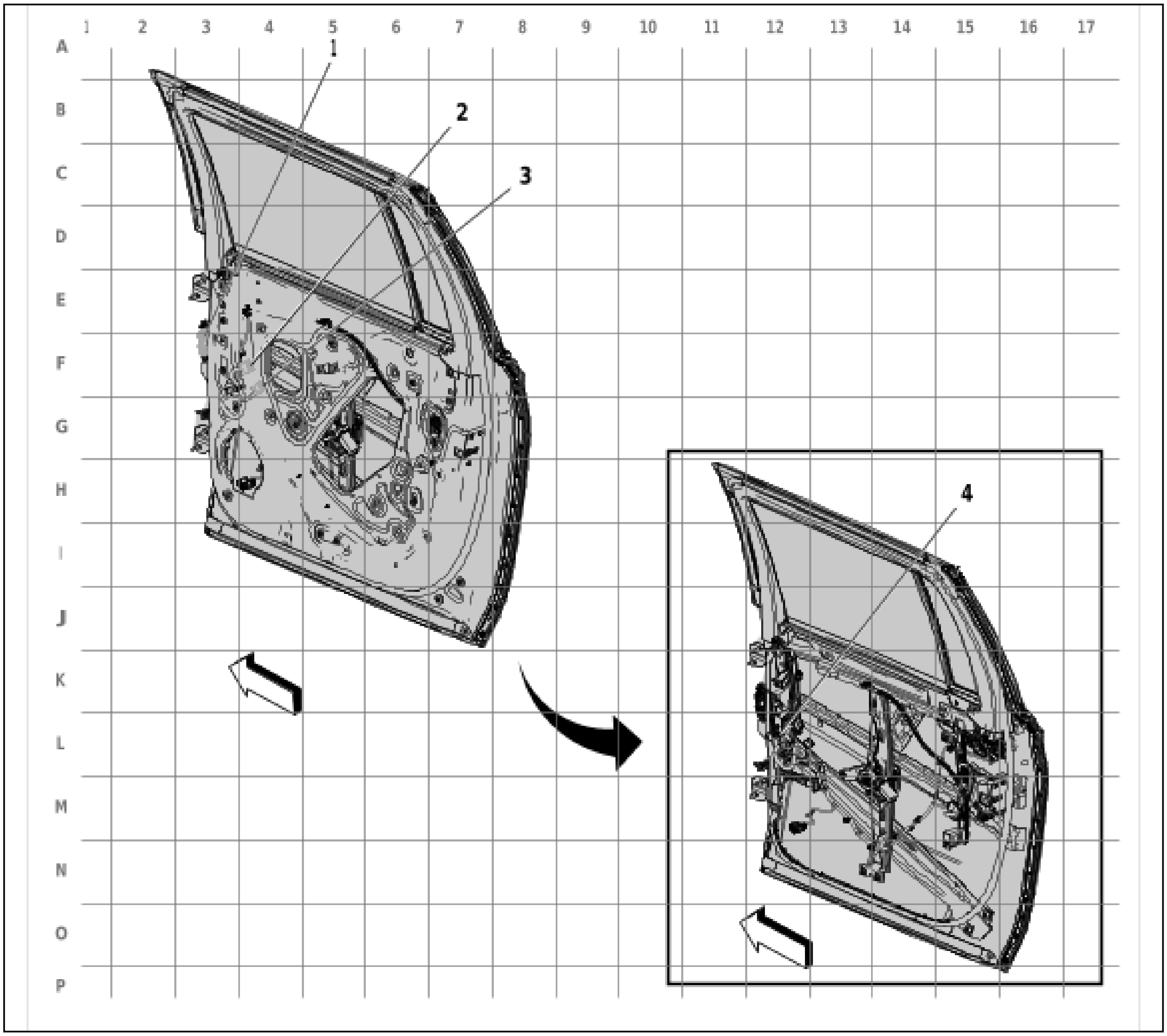
## Rear Side Door Door Lock Door Wiring Harness - Left Routing



6678517

| Items |
|---|
| (1) X706 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left |
| (2) J705 Rear Side Door Door Lock Door Wiring Harness - Left |
| (3) J706 Rear Side Door Door Lock Door Wiring Harness - Left |
| (4) X705 Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left |

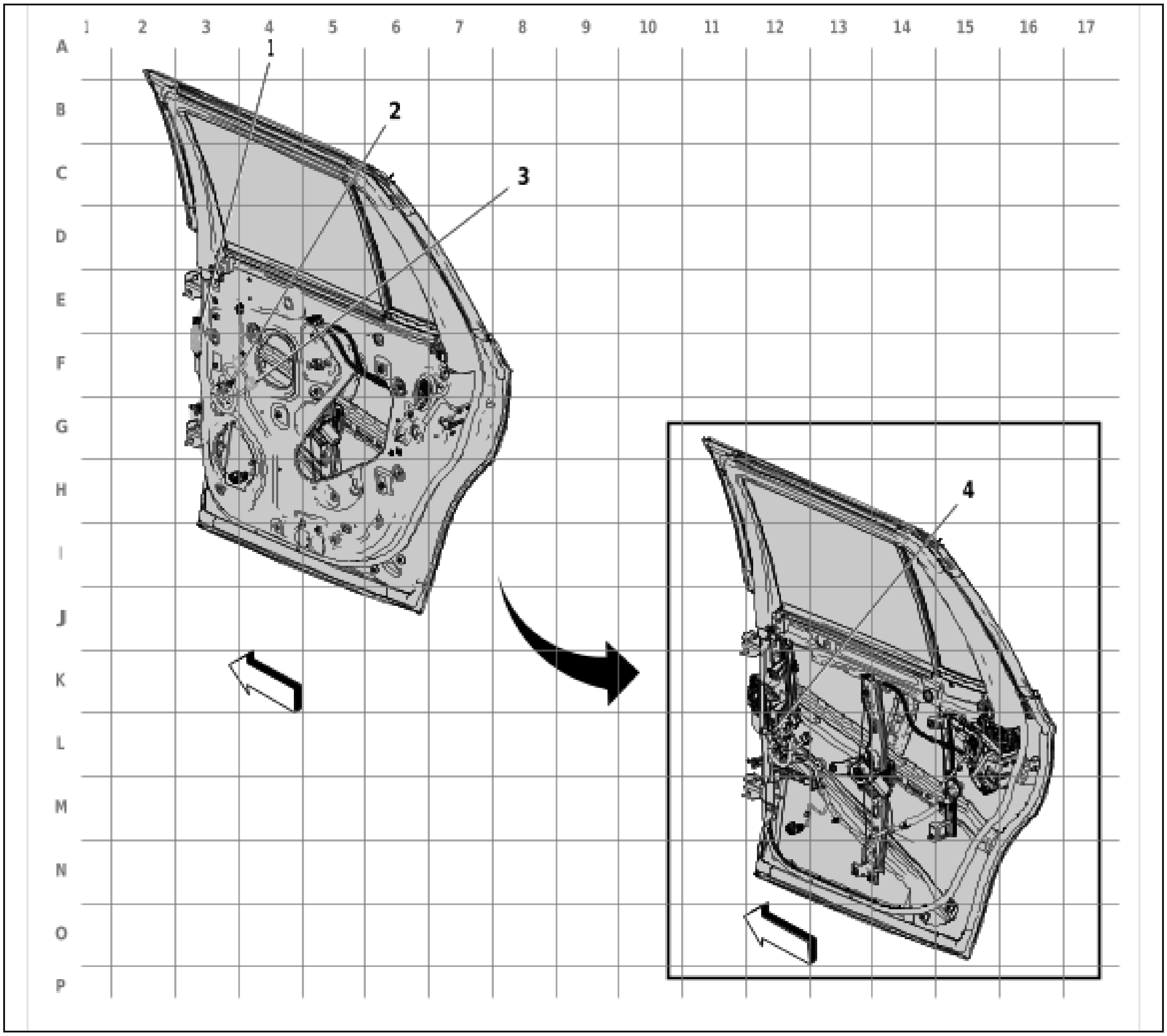
### Rear Side Door Door Wiring Harness - Right Routing (LWB)



6682047

| Items |
|---|
| (1) X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness |
| (2) X806 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right |
| (3) X805 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right |
| (4) J800 Rear Side Door Door Wiring Harness - Right |

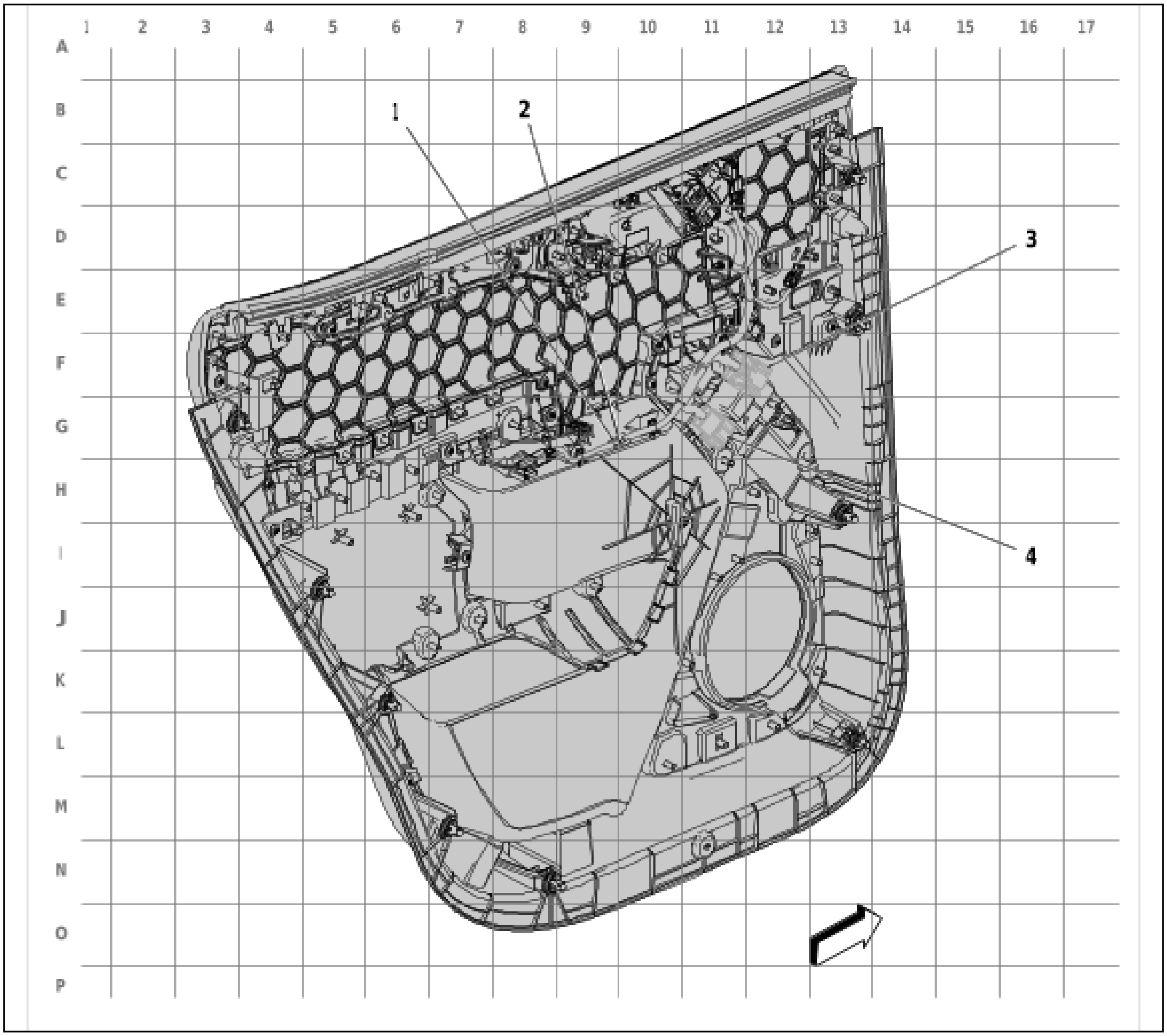
### Rear Side Door Door Wiring Harness - Right Routing (SWB)



6682048

| Items |
|---|
| (1) X800 Rear Side Door Door Wiring Harness - Right to Body Wiring Harness |
| (2) X806 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right |
| (3) X805 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right |
| (4) J800 Rear Side Door Door Wiring Harness - Right |

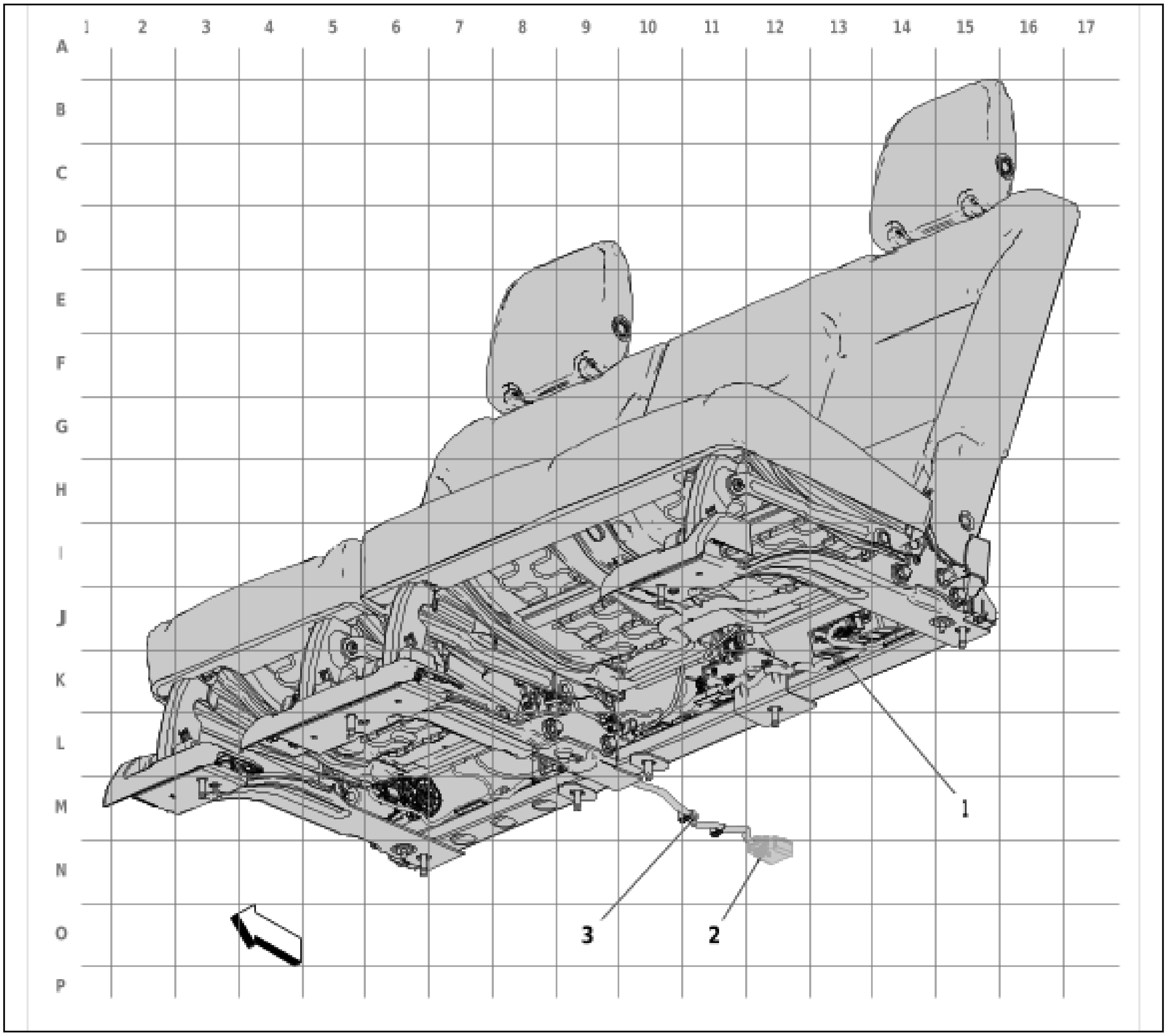
### Rear Side Door Door Lock Door Wiring Harness - Right Routing



6678518

| Items |
|---|
| (1) J805 Rear Side Door Door Lock Door Wiring Harness - Right |
| (2) J806 Rear Side Door Door Lock Door Wiring Harness - Right |
| (3) X806 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right |
| (4) X805 Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right |

### 3rd Row Seat Wiring Harness Routing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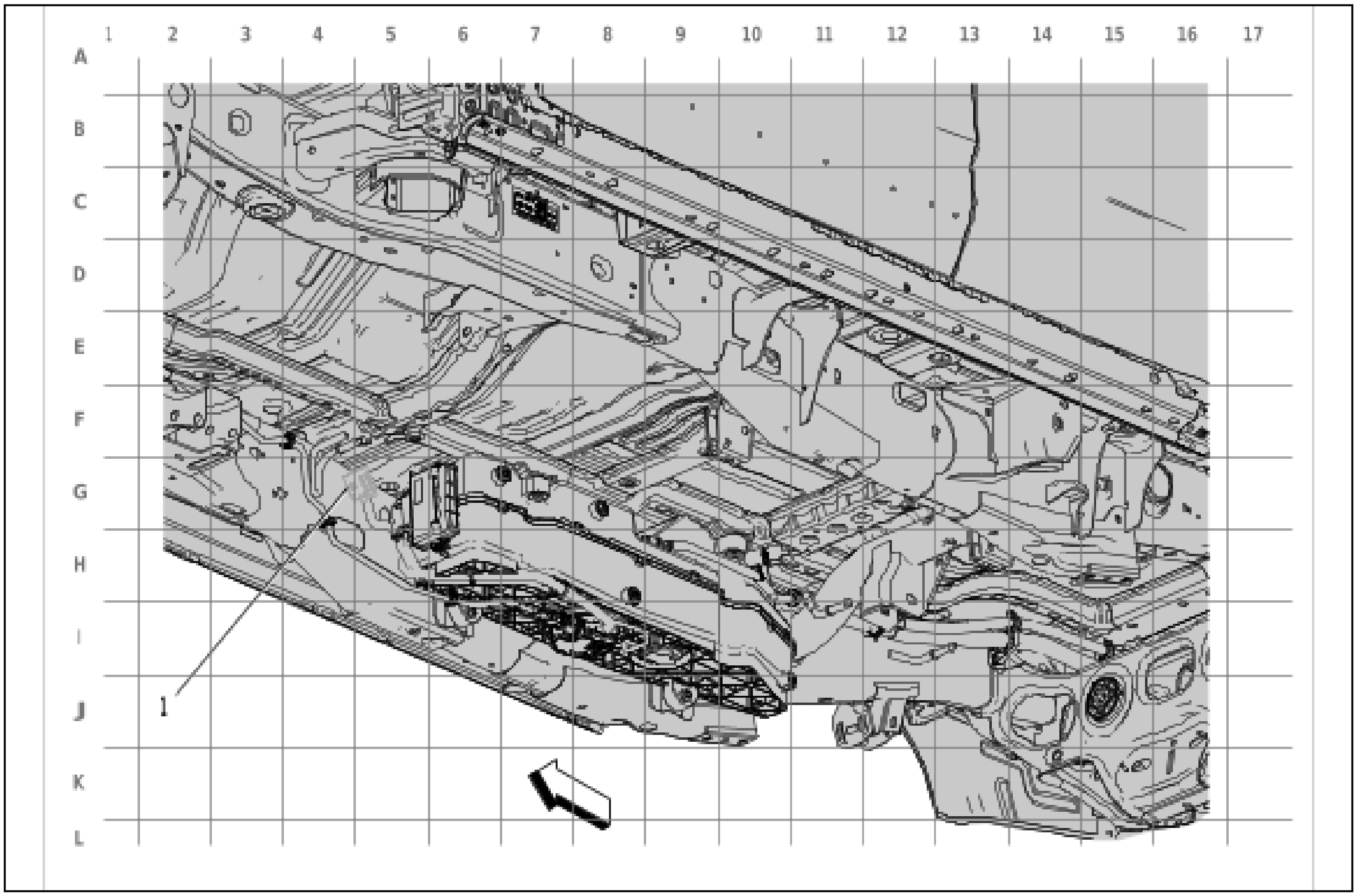
6691851

| Items |
|---|
| (1) J441 3rd Row Seat Wiring Harness (AS8) |
| (2) X346 Body Wiring Harness to 3rd Row Seat Wiring Harness |
| (3) J466 3rd Row Seat Wiring Harness (UH6) |

## Emission Reduction Fluid Tank Reservoir Wire Harness Routing (LZ0)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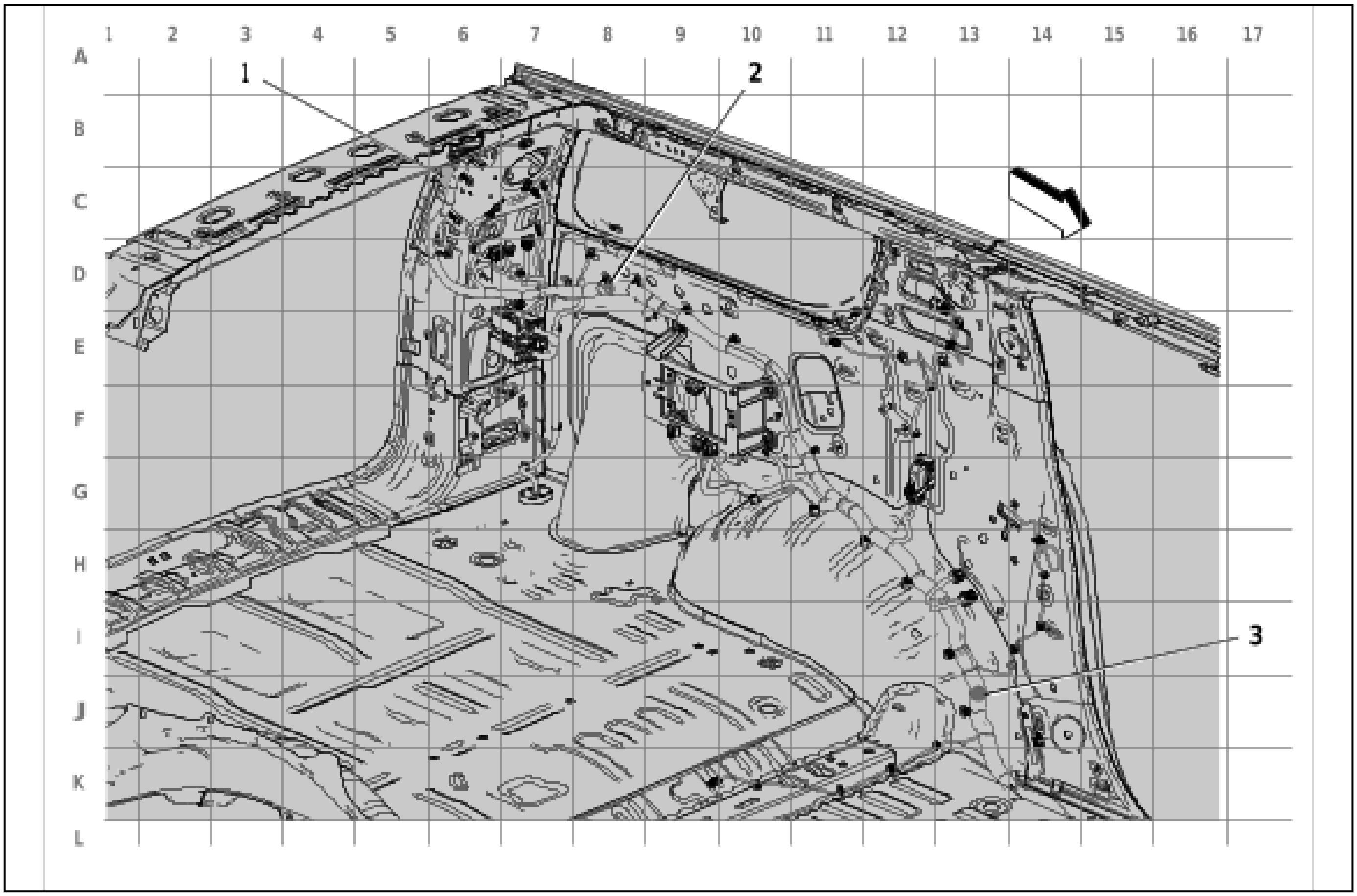
6666132

| Items |
|---|
| (1) X999 Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness (LZ0) |

## Body Wiring Harness Routing - Luggage Compartment Left Side (LWB)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6685753

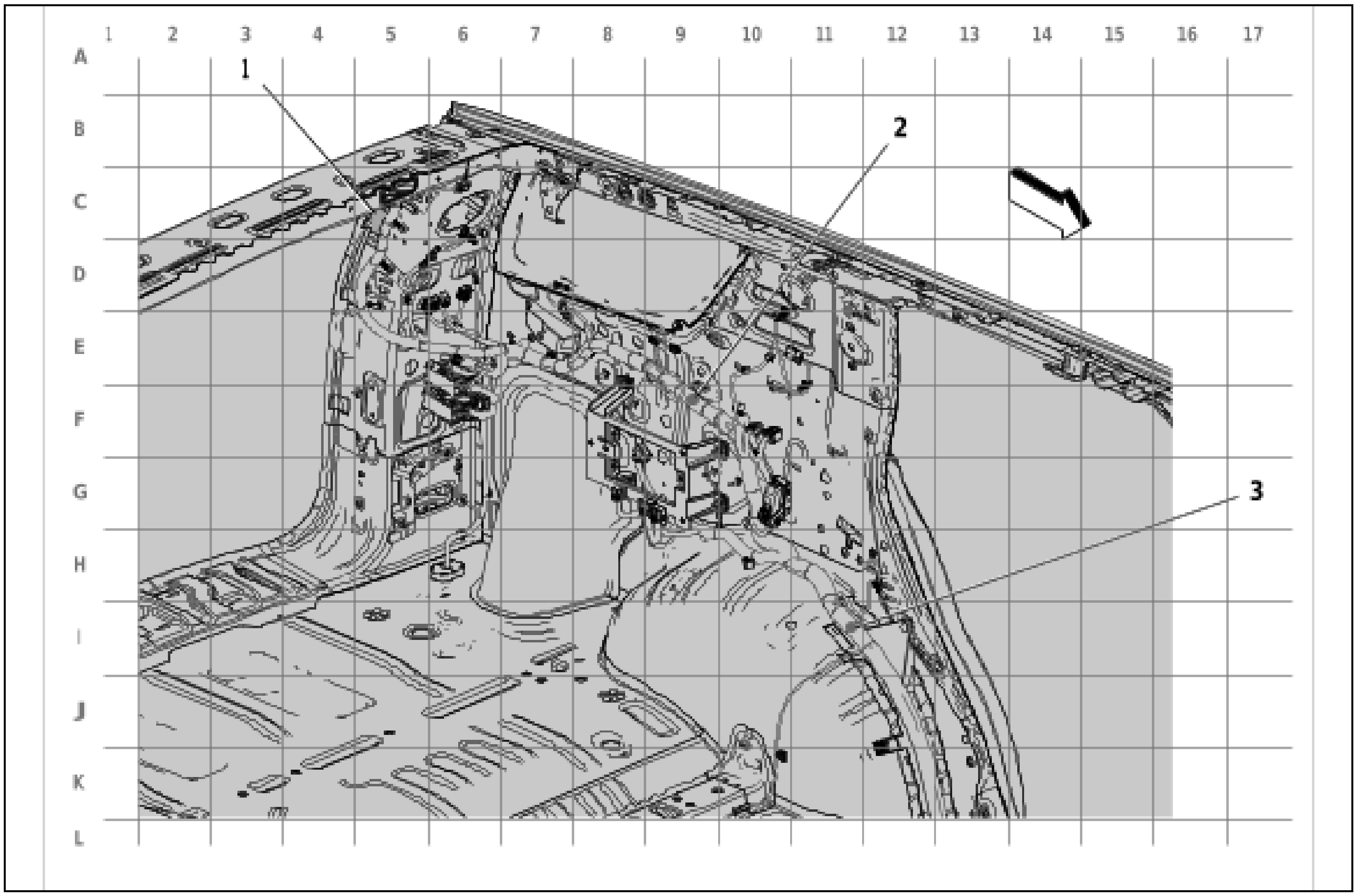
**Items**

(1) X960 Roof Wiring Harness to Body Wiring Harness

(2) J404 Body Wiring Harness

(3) J403 Body Wiring Harness

### Body Wiring Harness Routing - Luggage Compartment Left Side (SWB)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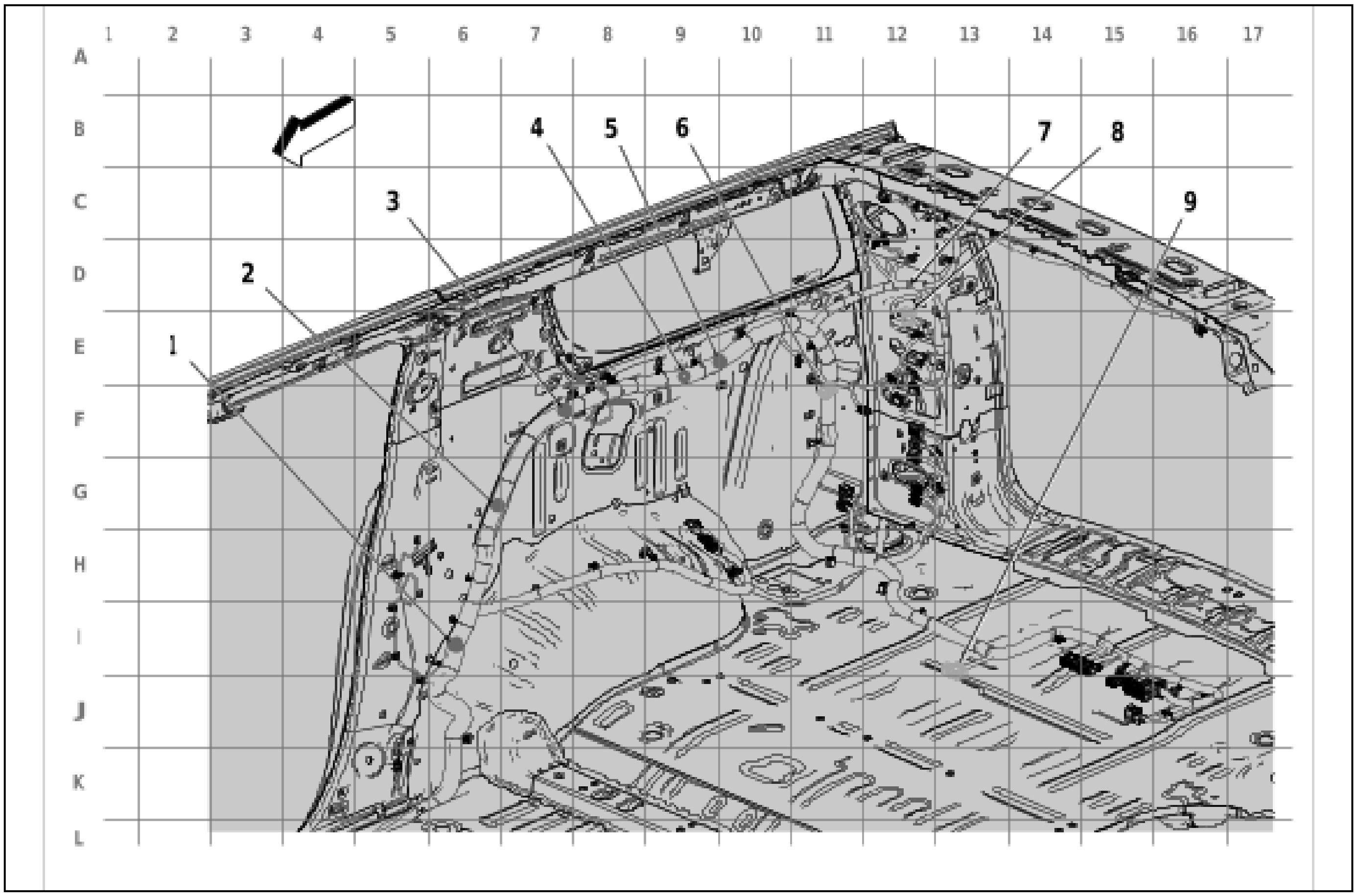
6685754

| Items |
|---|
| (1) X960 Roof Wiring Harness to Body Wiring Harness |
| (2) J404 Body Wiring Harness |
| (3) J403 Body Wiring Harness |

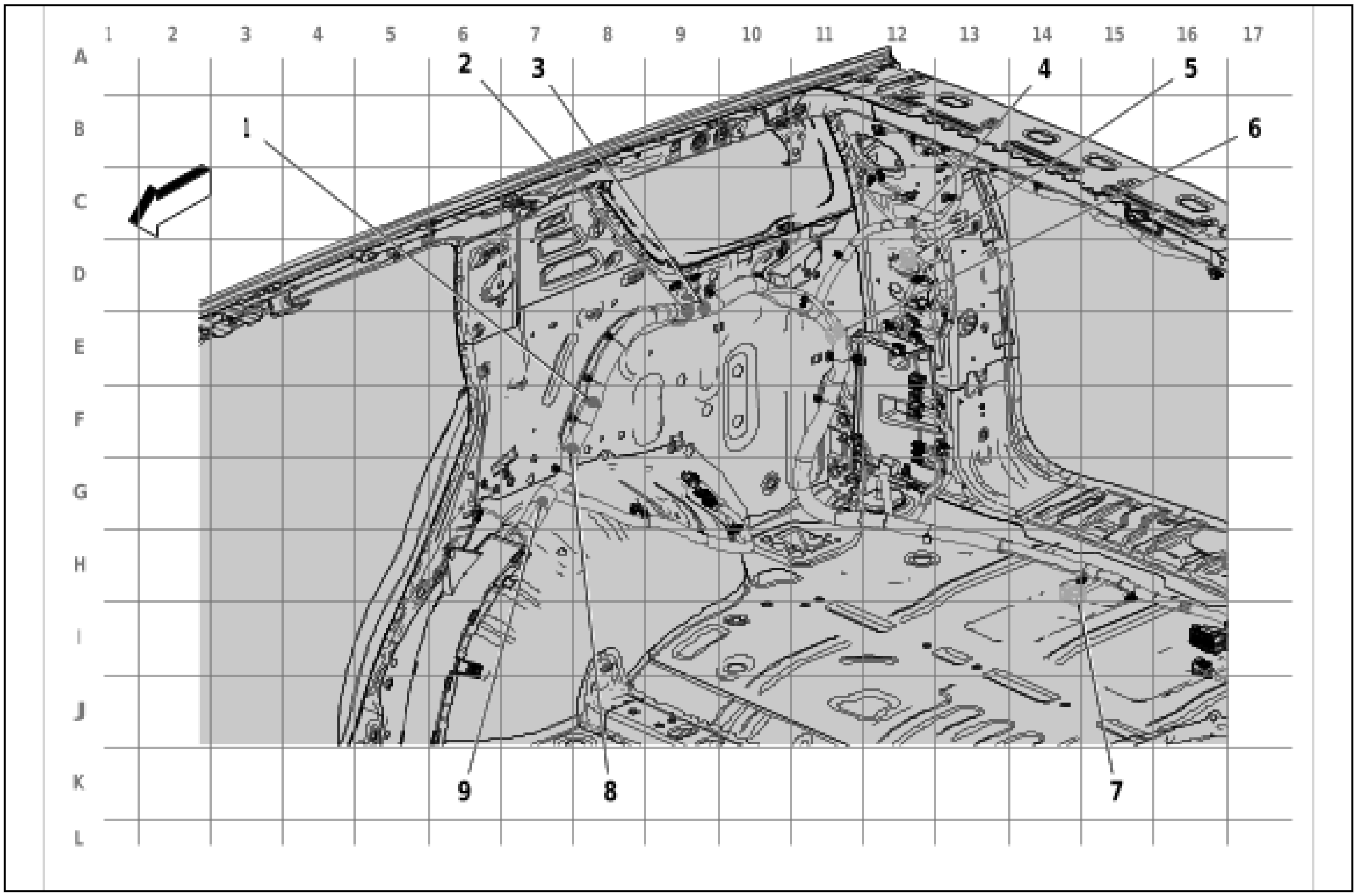
## Body Wiring Harness Routing - Luggage Compartment Right Side (LWB)



6685755

| Items |
|---|
| (1) J392 Body Wiring Harness |
| (2) J402 Body Wiring Harness |
| (3) J443 Body Wiring Harness |
| (4) J430 Body Wiring Harness |
| (5) J426 Body Wiring Harness |
| (6) X251 Body Wiring Harness to Auxiliary Heater and Air Conditioning Wiring Harness |
| (7) J436 Body Wiring Harness (UKL) |
| (8) X602 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI5) |
| (9) X346 Body Wiring Harness to 3rd Row Seat Wiring Harness |

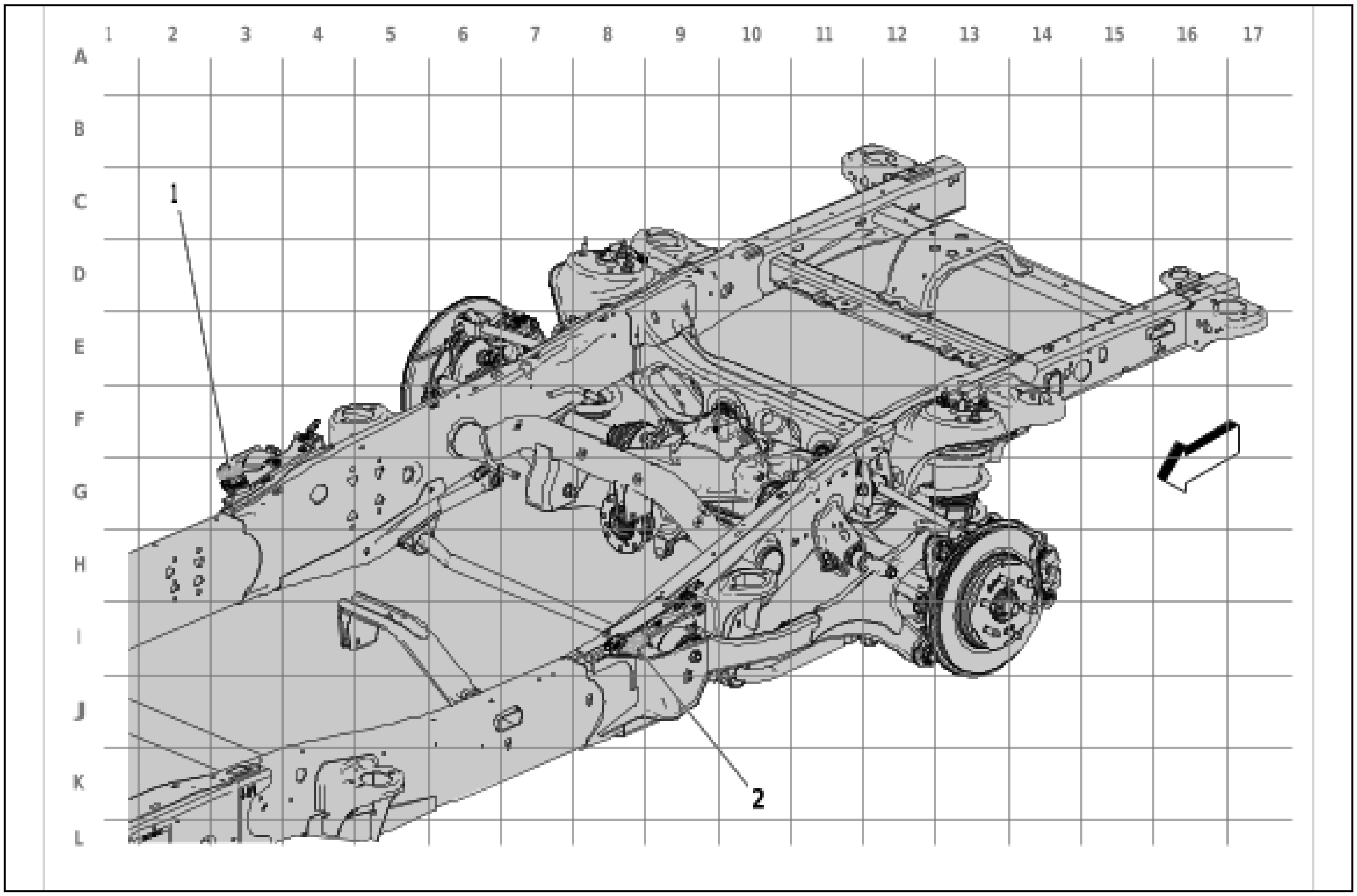
## Body Wiring Harness Routing - Luggage Compartment Right Side (SWB)



6685756

| Items |
|---|
| (1) J402 Body Wiring Harness |
| (2) J443 Body Wiring Harness |
| (3) J430 Body Wiring Harness |
| (4) J436 Body Wiring Harness (UKL) |
| (5) X602 Body Wiring Harness to Body Rear Wiring Harness Extension Harness (KI5) |
| (6) X251 Body Wiring Harness to Auxiliary Heater and Air Conditioning Wiring Harness |
| (7) X346 Body Wiring Harness to 3rd Row Seat Wiring Harness |
| (8) J426 Body Wiring Harness |
| (9) J392 Body Wiring Harness |

## Chassis Rear Wiring Harness Extension Harness Routing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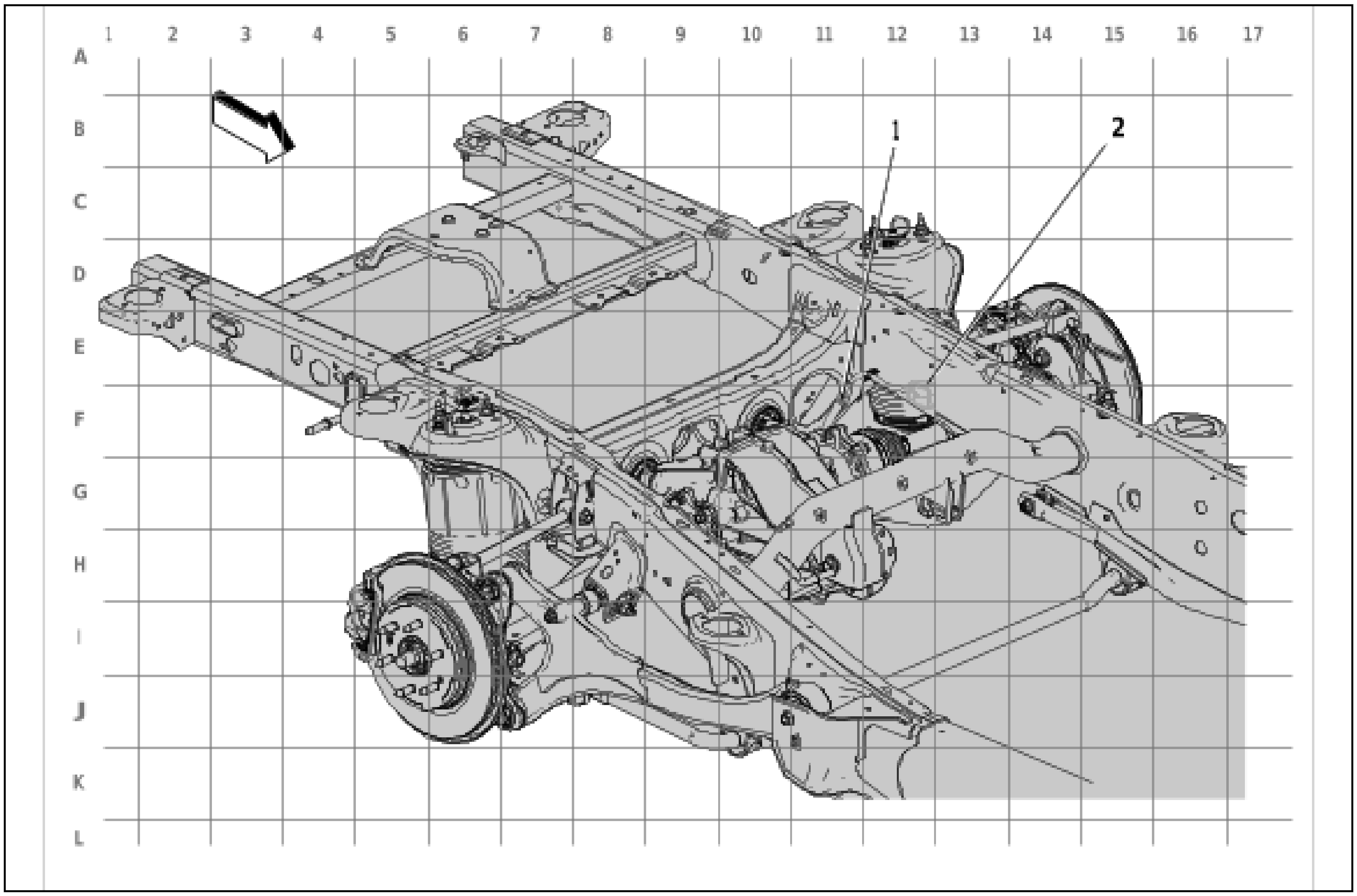
6677062

| Items |
|---|
| (1) X904R Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Right |
| (2) X904L Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Left |

## Differential Carrier Lock Wiring Harness Routing (G96)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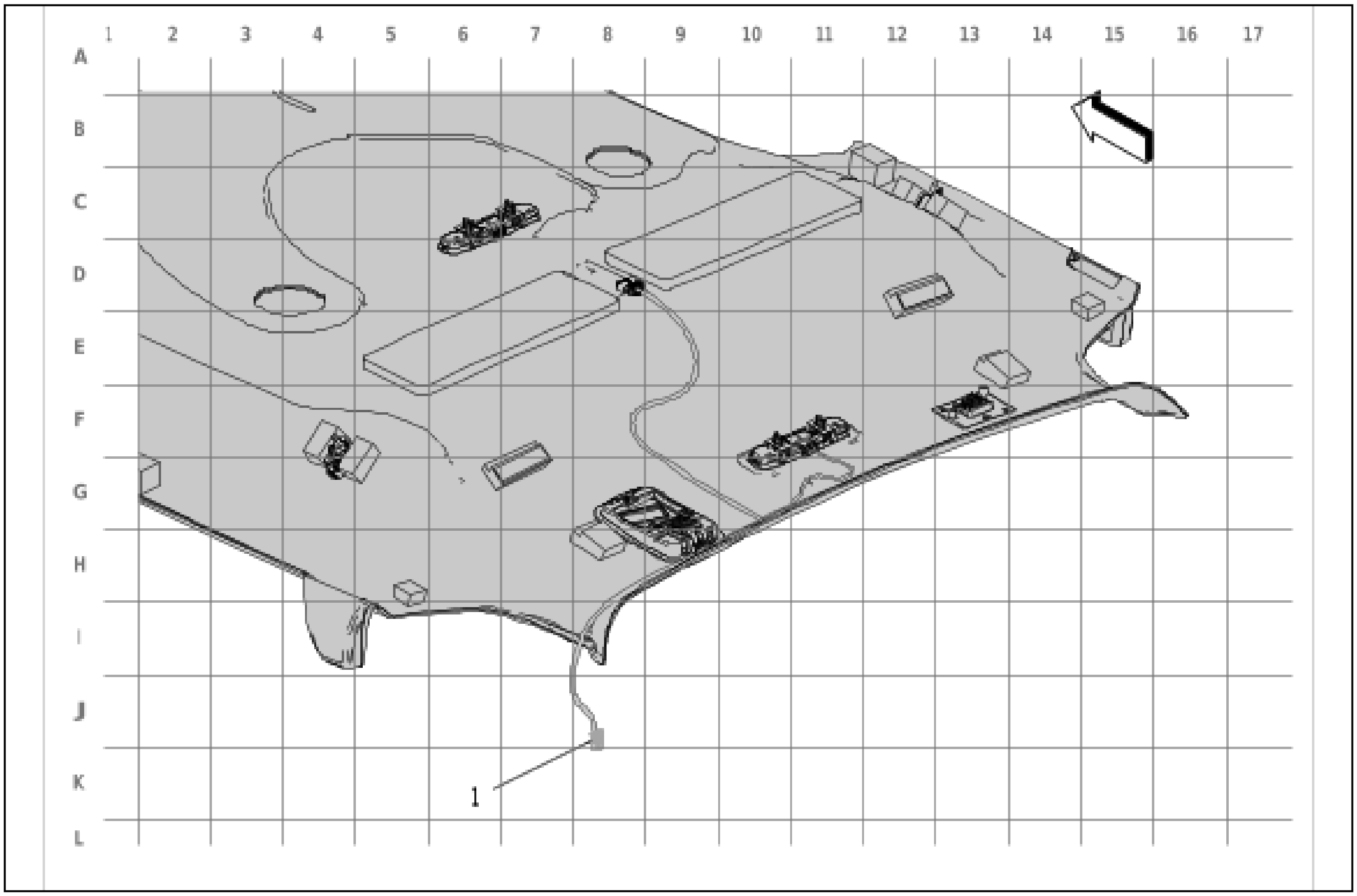
6678295

| Items |
|---|
| (1) J491 Differential Carrier Lock Wiring Harness (G96) |
| (2) X415R Chassis Wiring Harness to Differential Carrier Lock Wiring Harness (G96) |

## Roof Wiring Harness Routing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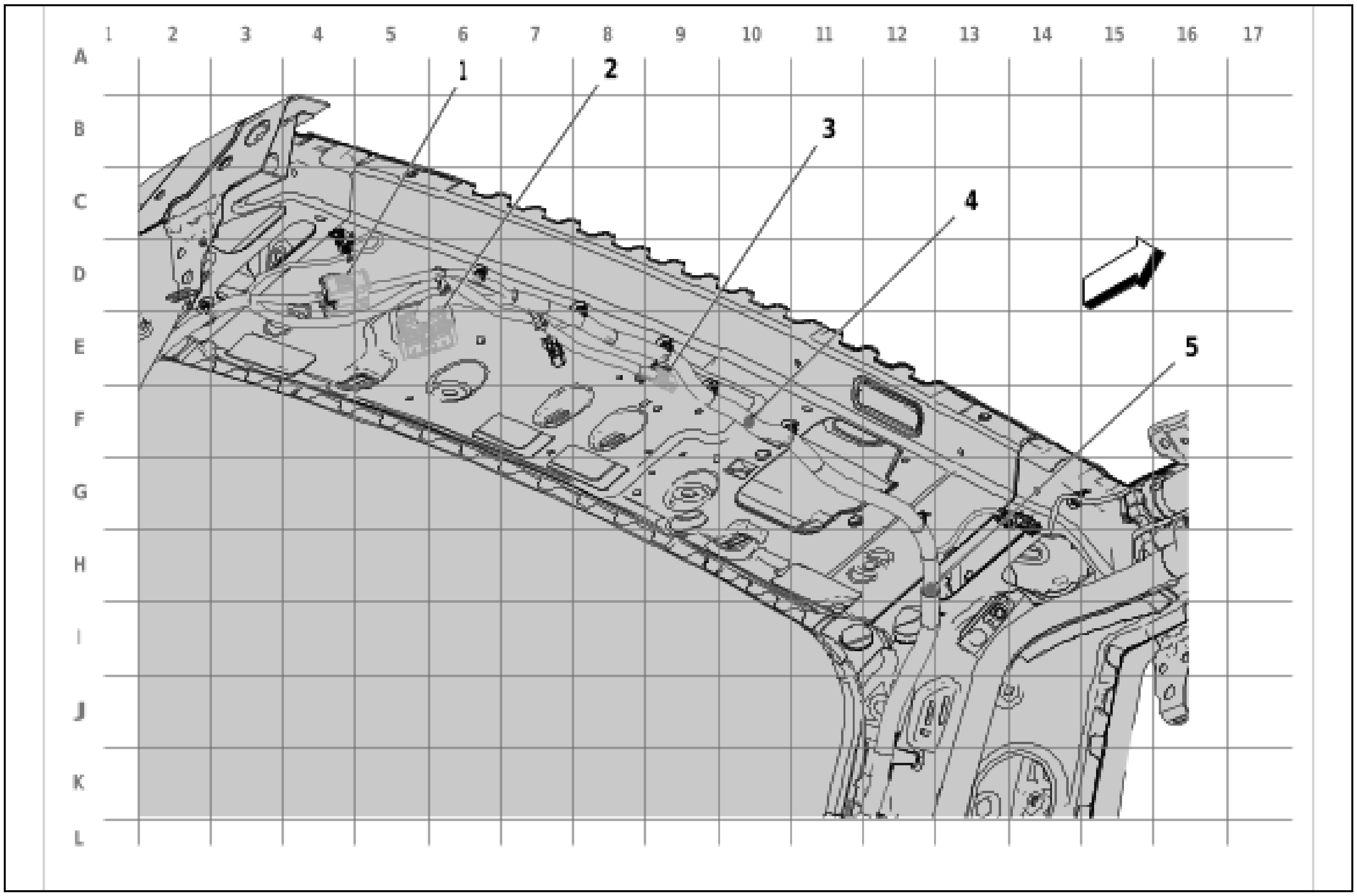
6676710

| Items |
|---|
| (1) X960 Roof Wiring Harness to Body Wiring Harness |

## Body Wiring Harness Routing - Upper Luggage Compartment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6685757

**Items**

(1) X309 Body Wiring Harness to Body Wiring Harness

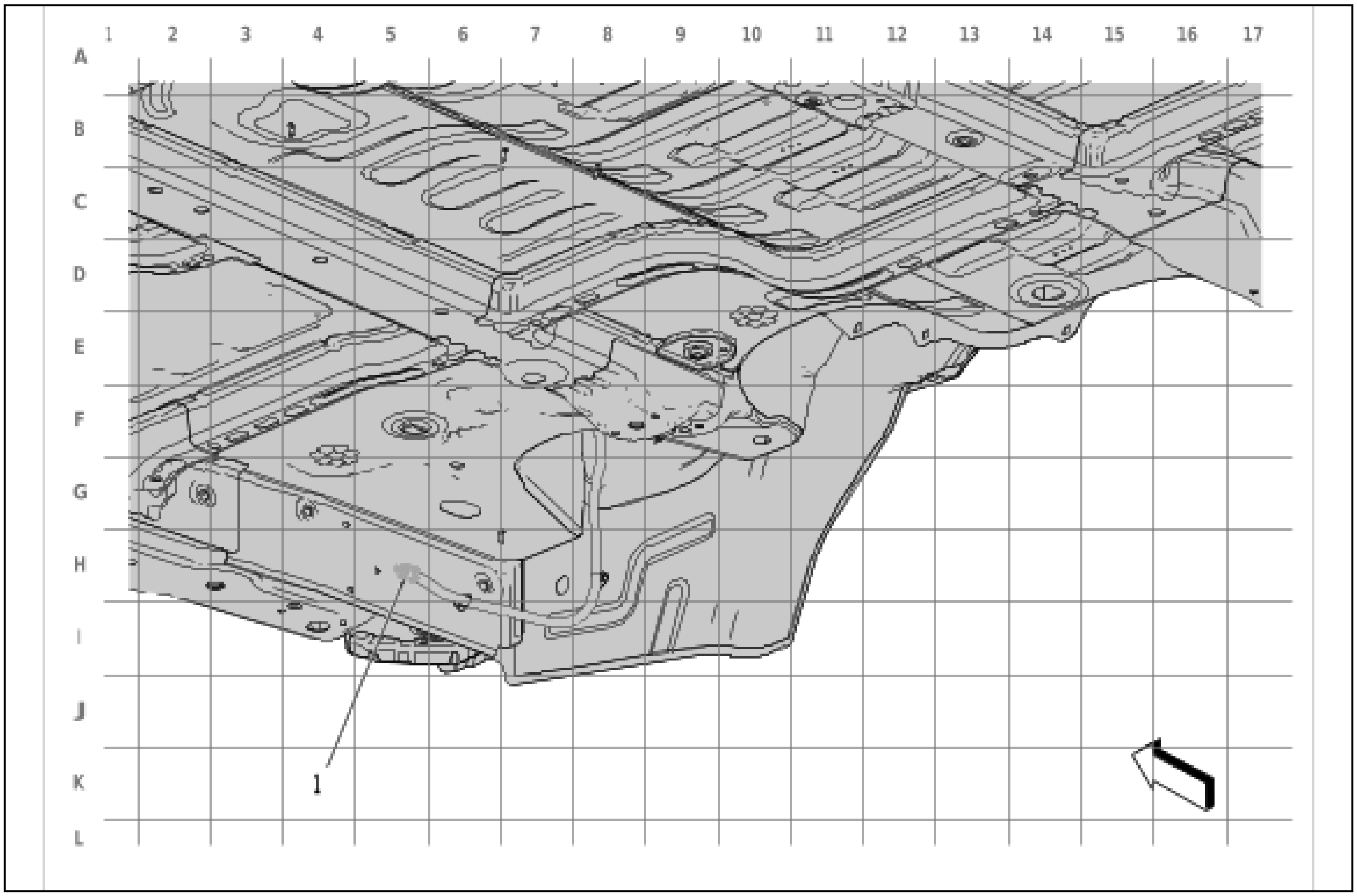
(2) X905 Liftgate Wiring Harness to Body Wiring Harness

(3) X995R Body Wiring Harness to Rearview Driver Information Camera Rear Closure Coaxial Cable

(4) J410 Body Wiring Harness

(5) J460 Body Wiring Harness

## Fuel Tank Filler Door Lock Release Wiring Harness Routing (N08)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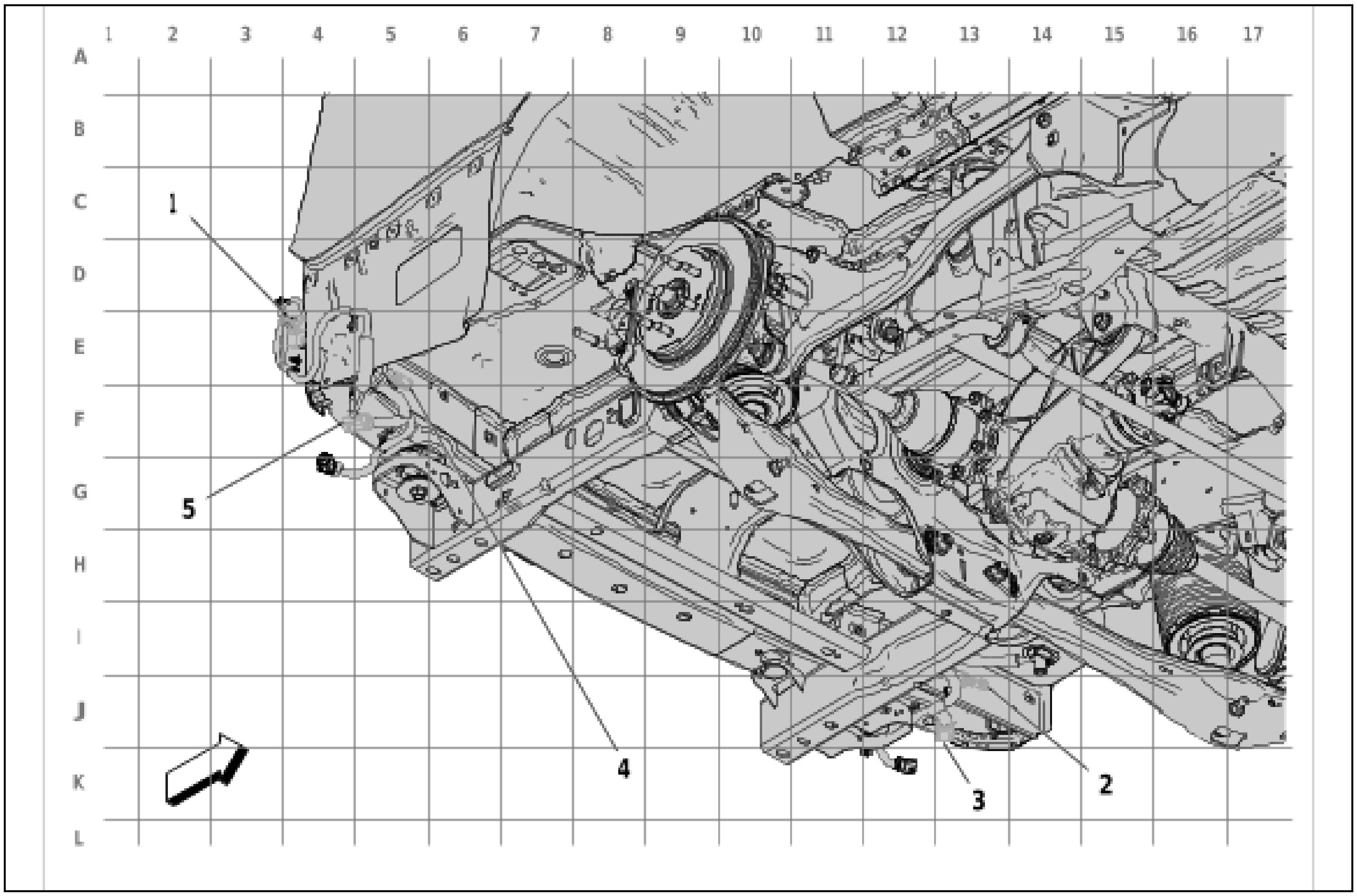
6686796

| Items |
|---|
| (1) X353 Fuel Tank Filler Door Lock Release Wiring Harness to Body Wiring Harness (N08) |

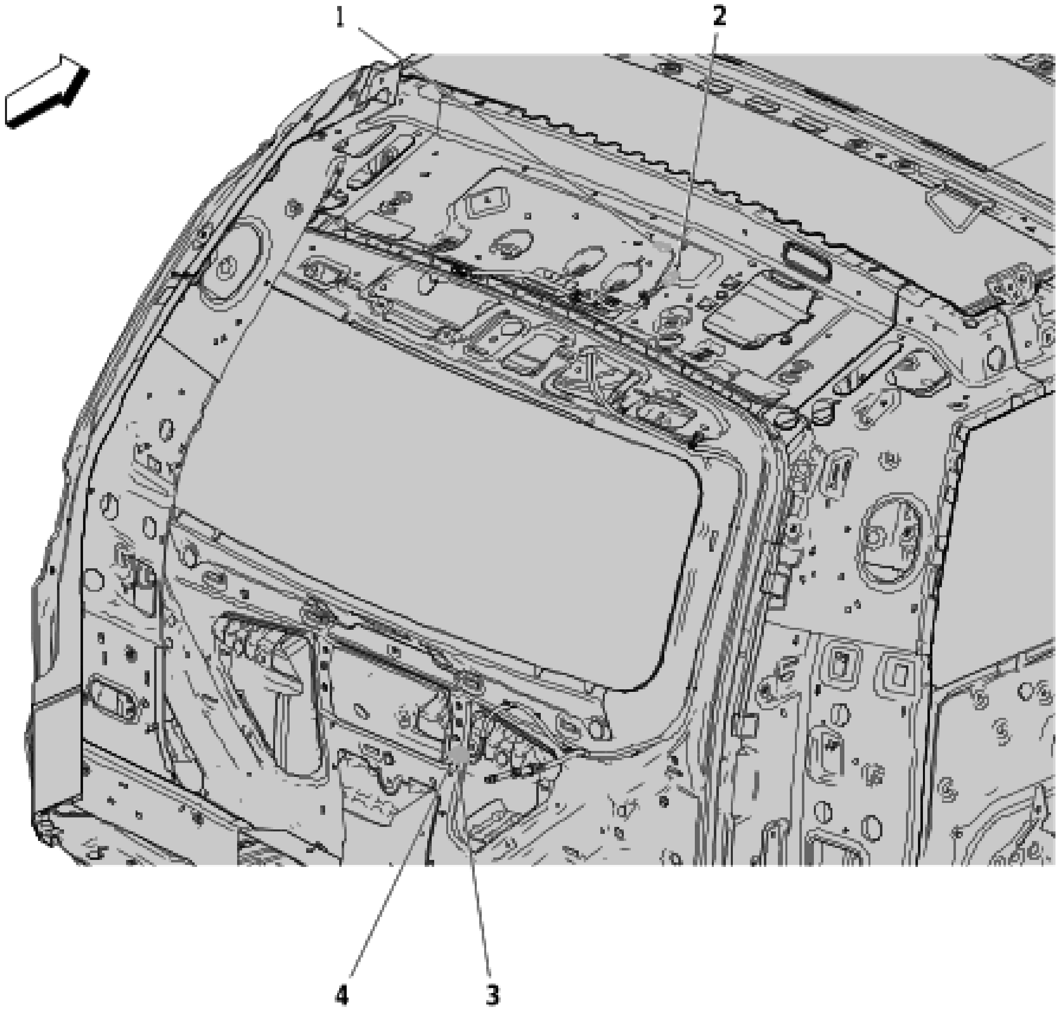
### Body Wiring Harness Routing - Rear Underbody



6685758

| Items |
|---|
| (1) X953 Body Wiring Harness to Rear Object Alarm Sensor Wiring Harness |
| (2) X353 Fuel Tank Filler Door Lock Release Wiring Harness to Body Wiring Harness (N08) |
| (3) X410 Rear Body Structure Stop Lamp to Body Wiring Harness |
| (4) X402 Chassis Wiring Harness to Body Wiring Harness |
| (5) X420 Rear Body Structure Stop Lamp to Body Wiring Harness |

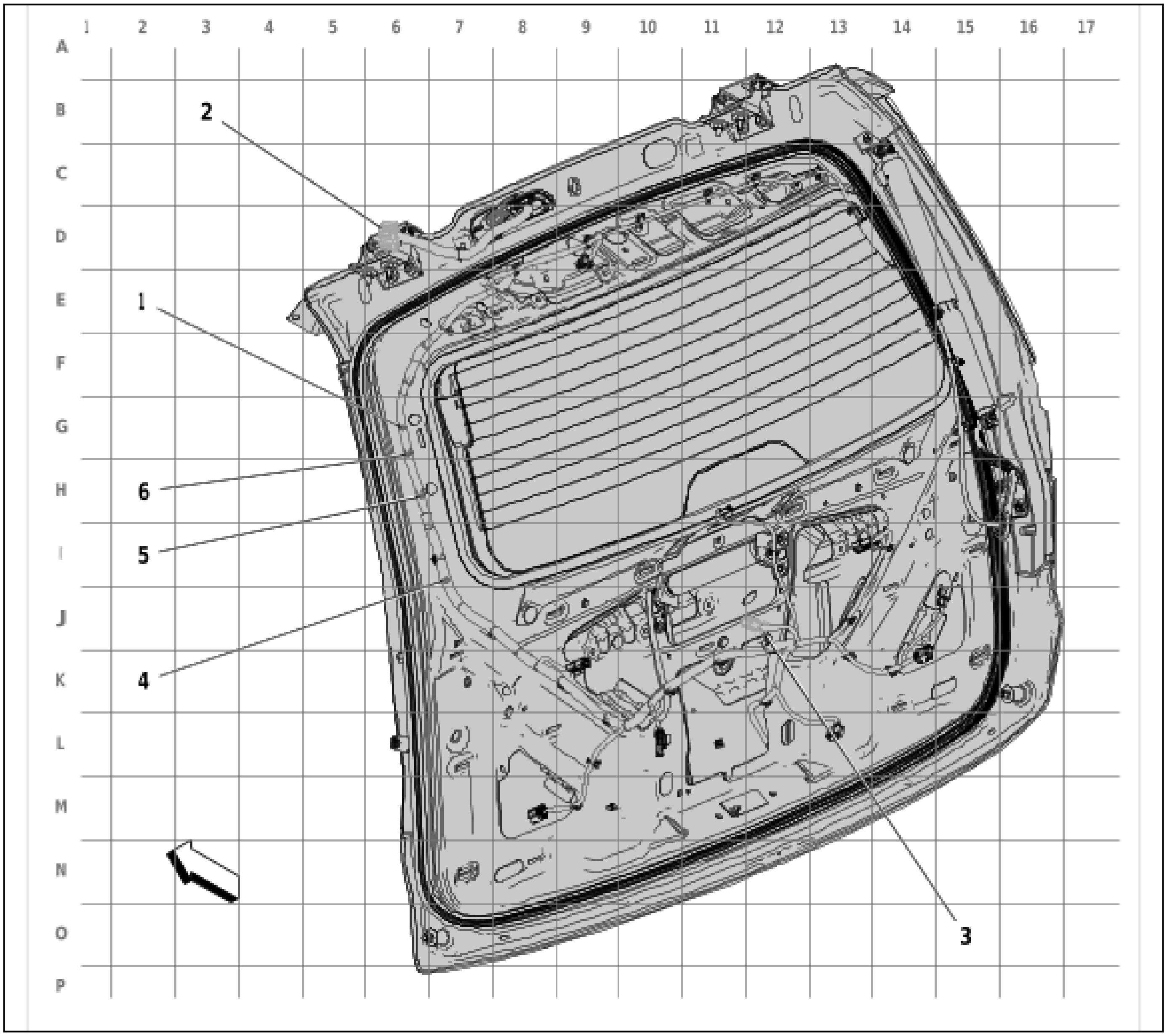
## Rearview Driver Information Camera Rear Closure Coaxial Cable Routing



6678296

| Items |
|---|
| (1) X995R Body Wiring Harness to Rearview Driver Information Camera Rear Closure Coaxial Cable |
| (2) X996 Antenna Coaxial Cable to Antenna Coaxial Cable Jumper (DRZ) |
| (3) X995D Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness (DRZ) |
| (4) X995S |

### Liftgate Wiring Harness Routing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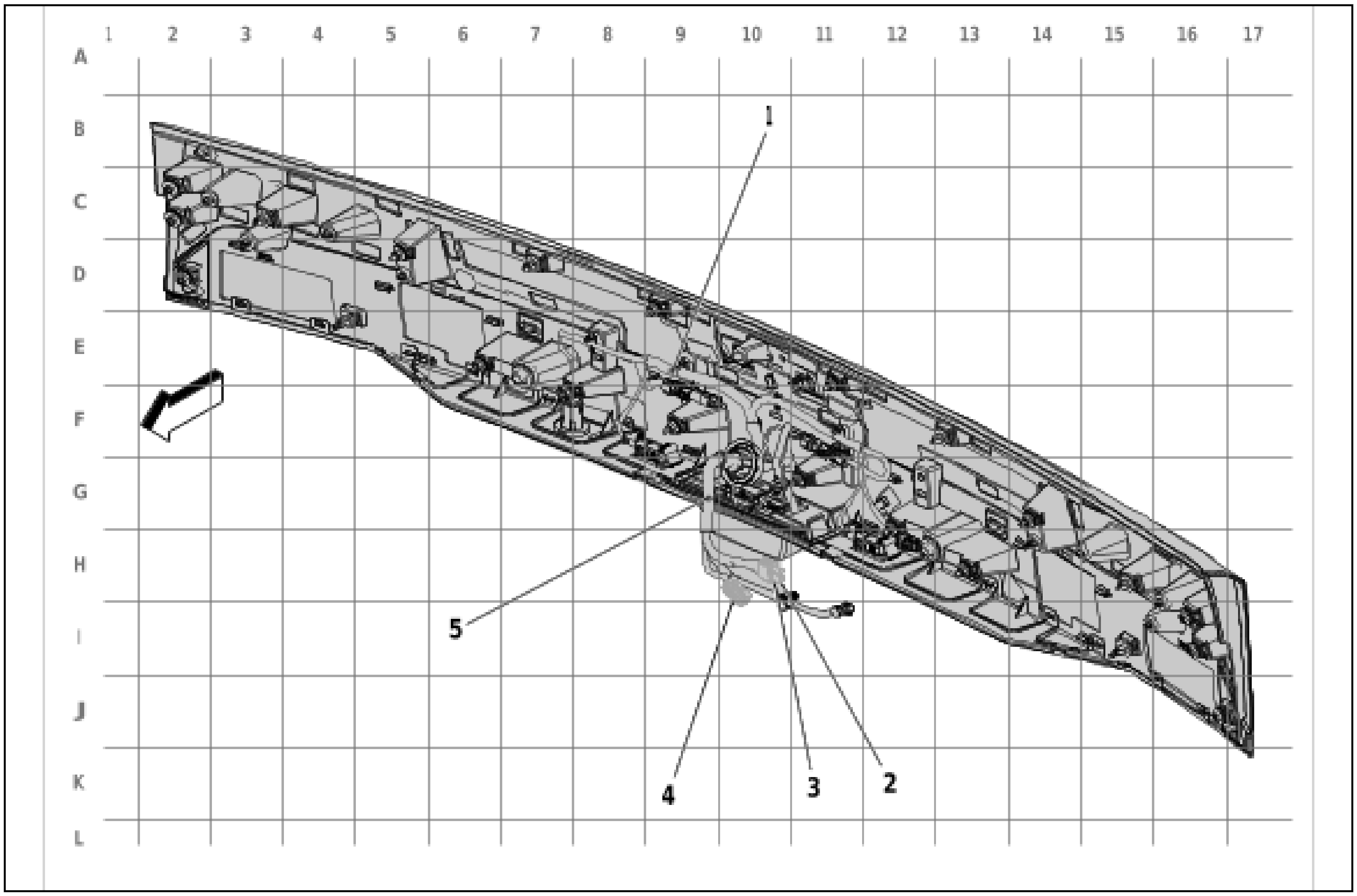
6678297

| Items |
|---|
| (1) J904 Liftgate Wiring Harness |
| (2) X905 Liftgate Wiring Harness to Body Wiring Harness |
| (3) X907 Rear License Plate Lamp Wiring Harness to Liftgate Wiring Harness |
| (4) J903 Liftgate Wiring Harness (5W4 / 9C1) |
| (5) J902 Liftgate Wiring Harness (5W4 / 9C1) |
| (6) J901 Liftgate Wiring Harness |

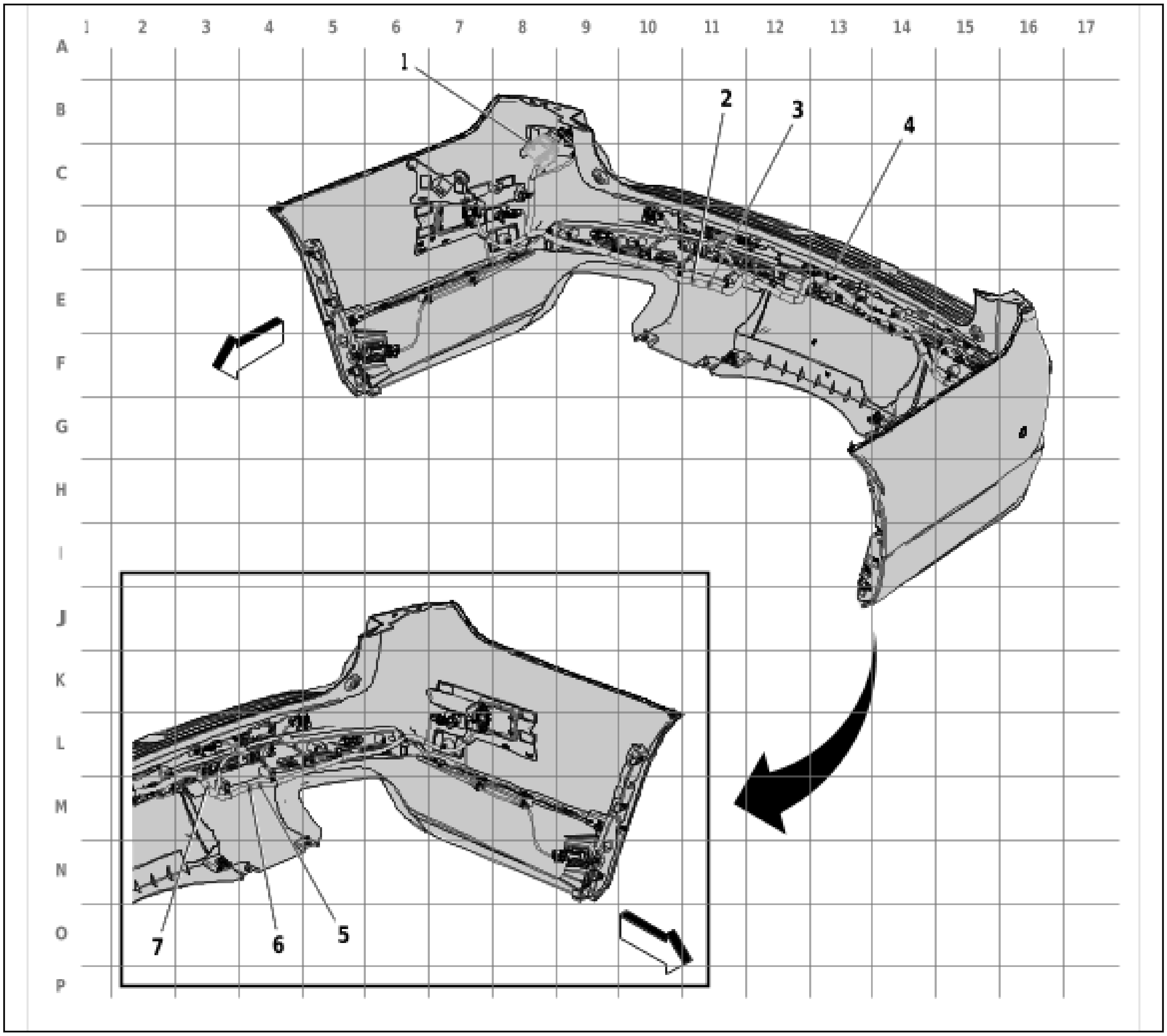
## Rear License Plate Lamp Wiring Harness Routing



6666133

| Items |
|---|
| (1) J911 Rear License Plate Lamp Wiring Harness |
| (2) X995D Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness (DRZ) |
| (3) X995S |
| (4) X907 Rear License Plate Lamp Wiring Harness to Liftgate Wiring Harness |
| (5) J934 Rear License Plate Lamp Wiring Harness |

## Rear Object Alarm Sensor Wiring Harness Routing

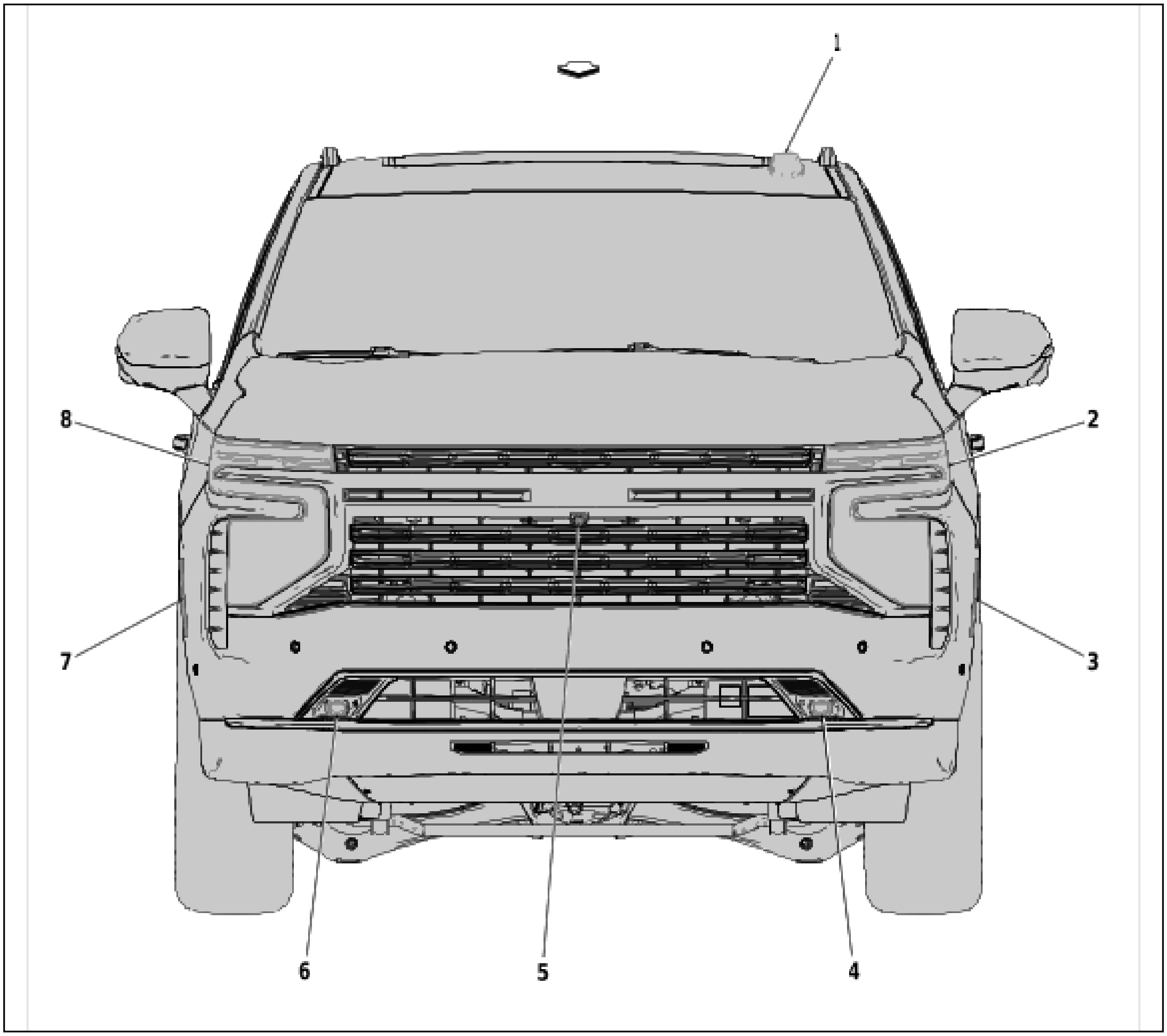


6666260

| Items |
|---|
| (1) X953 Body Wiring Harness to Rear Object Alarm Sensor Wiring Harness |
| (2) J425 Rear Object Alarm Sensor Wiring Harness |
| (3) J427 Rear Object Alarm Sensor Wiring Harness |
| (4) J431 Rear Object Alarm Sensor Wiring Harness |
| (5) J429 Rear Object Alarm Sensor Wiring Harness |
| (6) J442 Rear Object Alarm Sensor Wiring Harness |
| (7) J428 Rear Object Alarm Sensor Wiring Harness |

## Component Locator

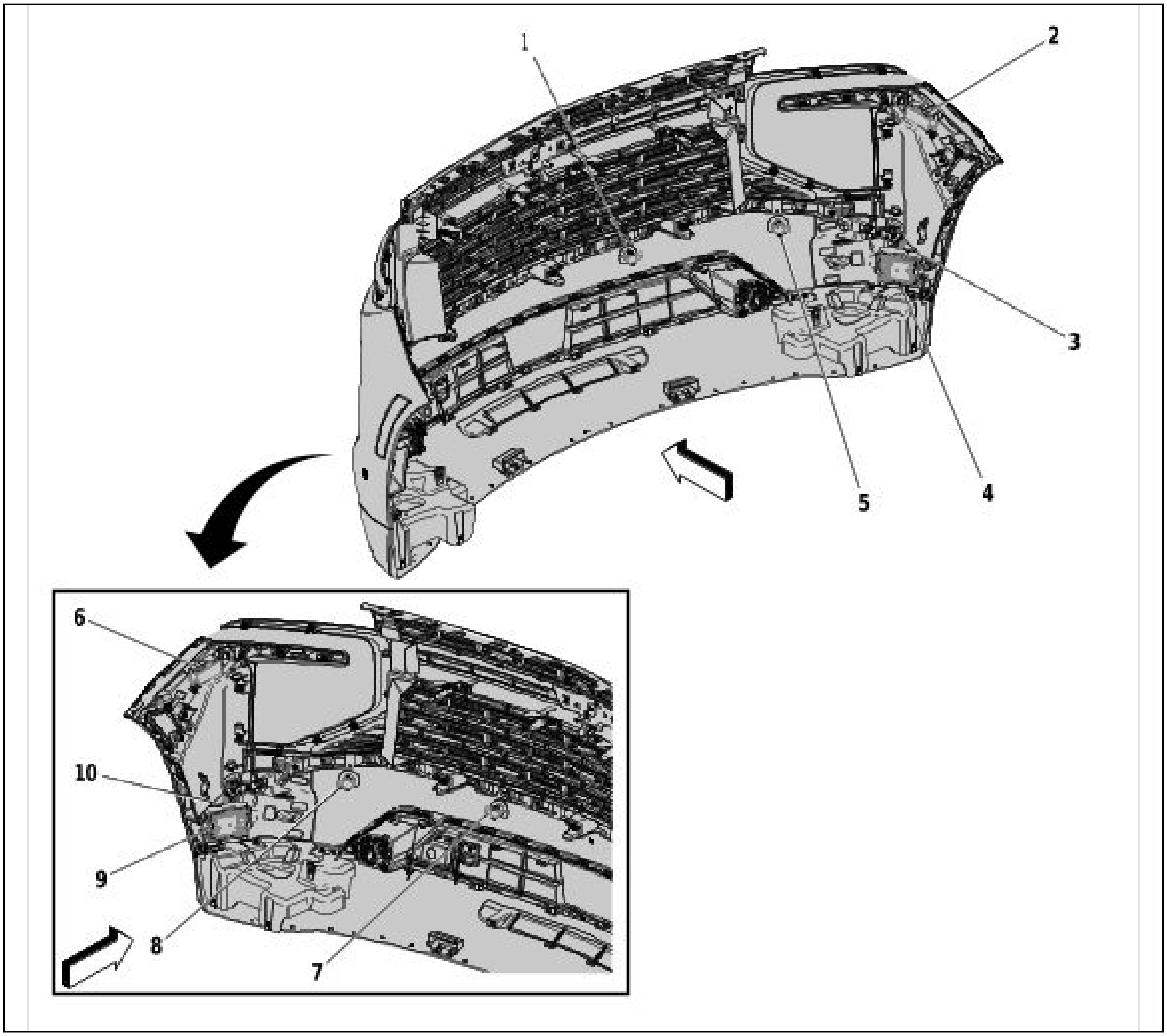
### Front of Vehicle Components



6666114

| Items |
|---|
| (1) T4P High Frequency Antenna |
| (2) E13LA Front Headlamp - Left |
| (3) E2LF Front Side Marker Lamp - Left |
| (4) E29LF Front Fog Lamp - Left (T40) |
| (5) B174G Front View Driver Information Camera - Grille |
| (6) E29RF Front Fog Lamp - Right (T40) |
| (7) E2RF Front Side Marker Lamp - Right |
| (8) E13RA Front Headlamp - Right |

### Front Fascia Components

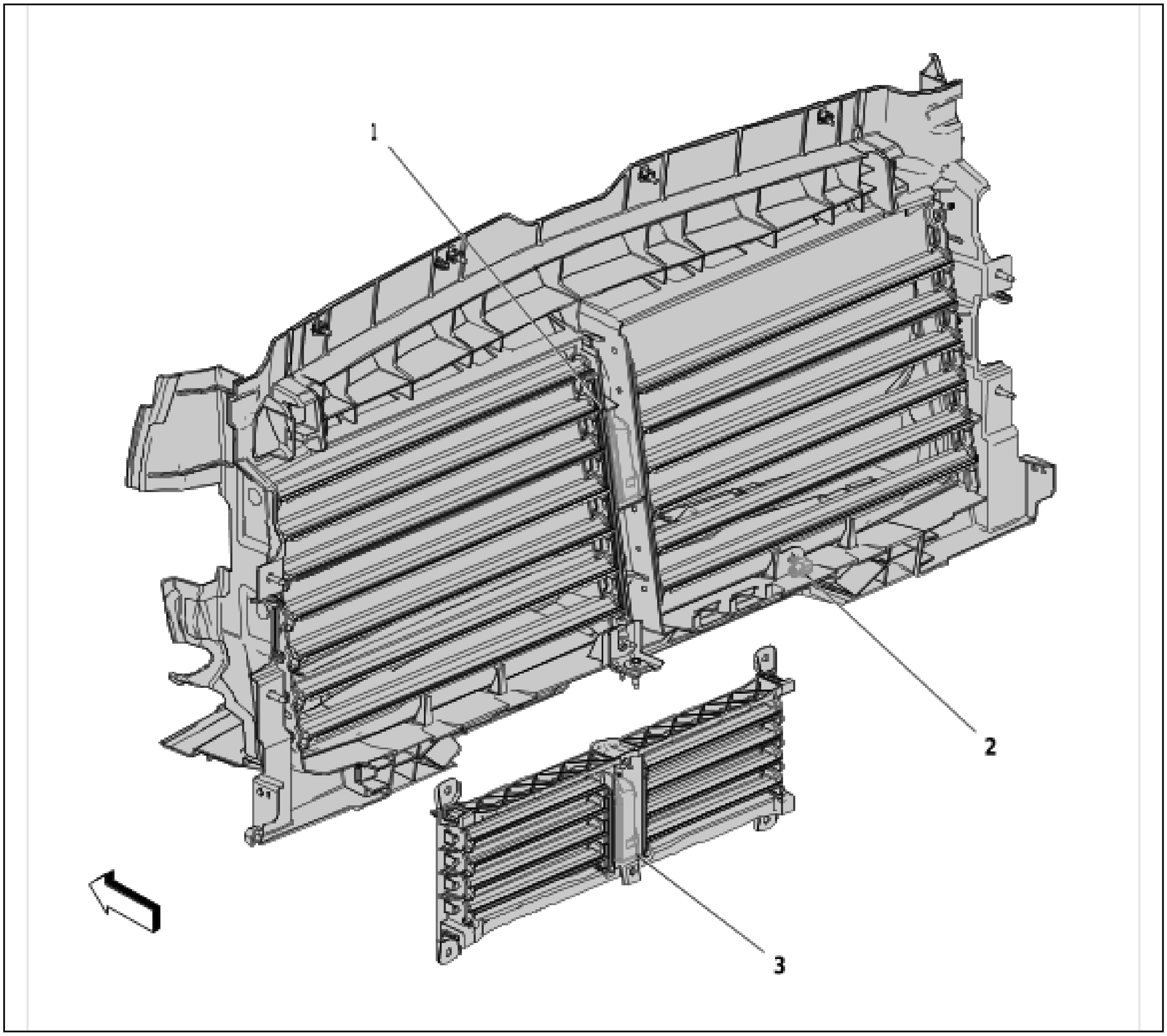


6666245

| Items |
|---|
| (1) B306CB Front Parking Assist Alarm Sensor - Right Middle (UKZ) |
| (2) B342A UHF Low Energy Remote Control Access Sensor Transceiver 1 (BOR / BOY) |
| (3) B166RFB Advanced Parking Assist Alarm Side Sensor - Right Front (UKZ) |
| (4) B233RF Short Range Radar Sensor - Right Front (UKL) |
| (5) B306DB Front Parking Assist Alarm Outer Sensor - Right (UKZ) |
| (6) B342C UHF Low Energy Remote Control Access Sensor Transceiver 3 (BOR / BOY) |
| (7) B306BB Front Parking Assist Alarm Sensor - Left Middle (UKZ) |
| (8) B306AB Front Parking Assist Alarm Outer Sensor - Left (UKZ) |

| Items |
|---|
| (9) B233LF Short Range Radar Sensor - Left Front (UKL) |
| (10) B166LFB Advanced Parking Assist Alarm Side Sensor - Left Front (UKZ) |

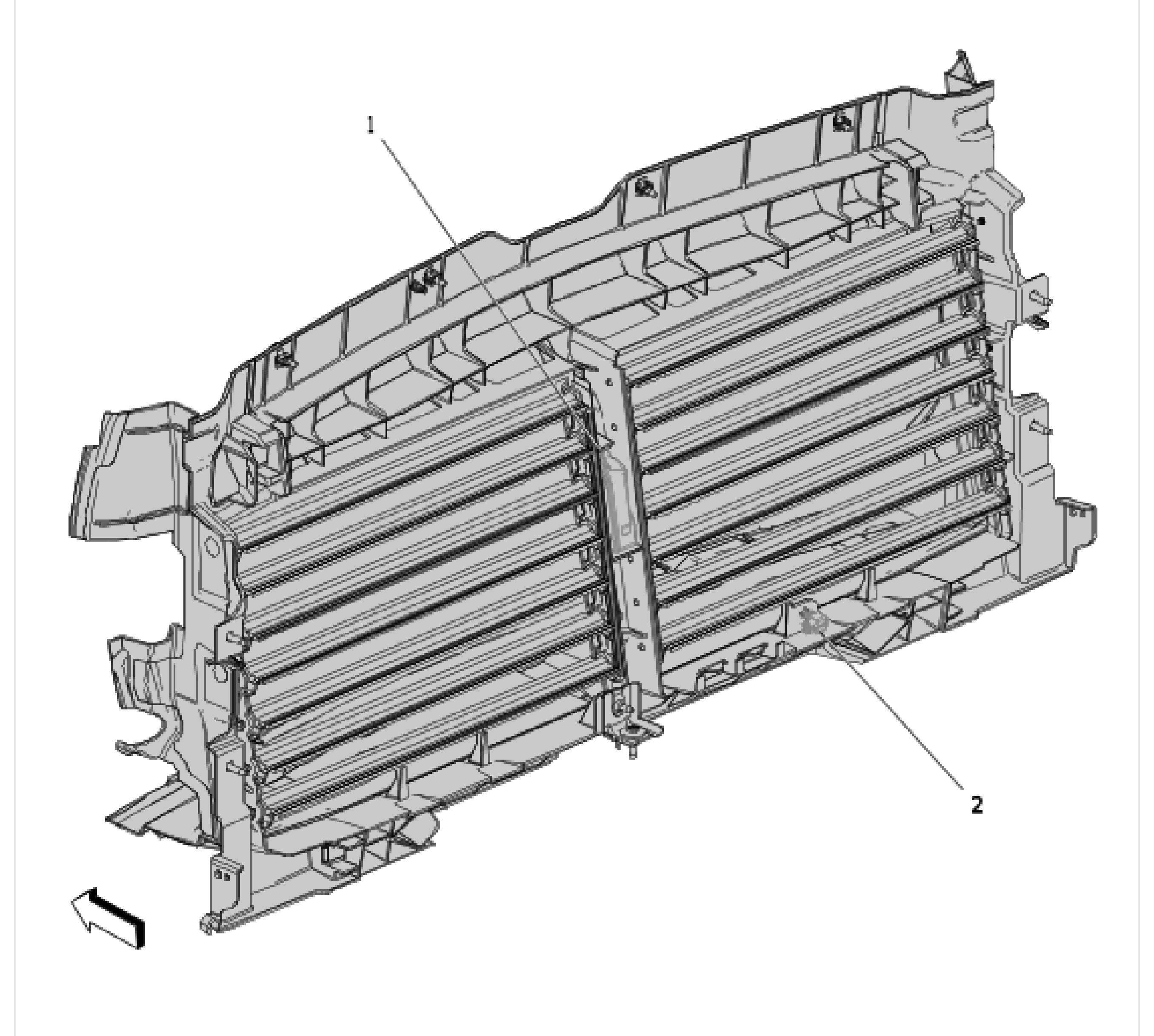
### Active Grille Air Shutter (WMI)



6691845

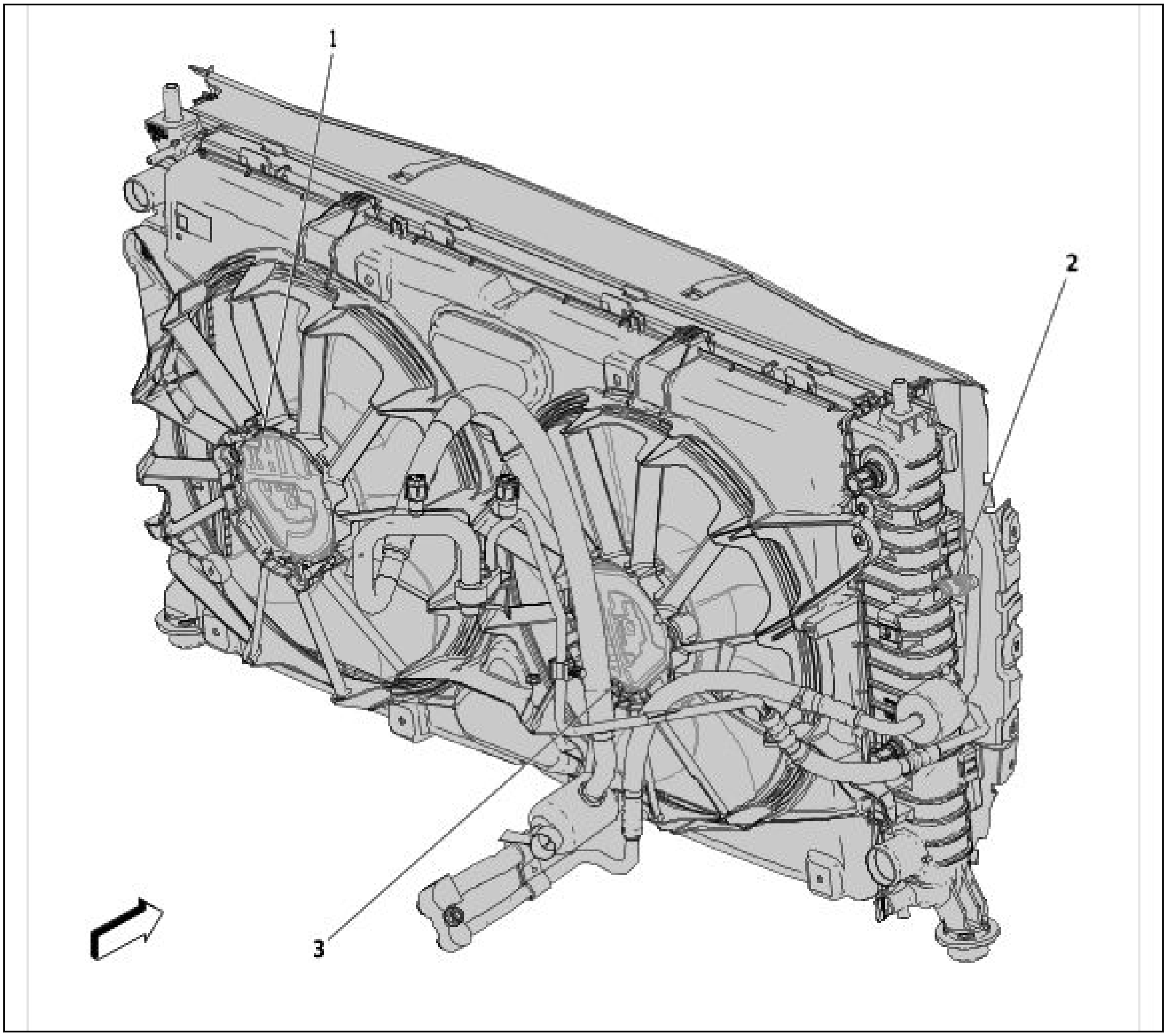
| Items |
|---|
| (1) M96A Active Grille Air Shutter Actuator 1 (VTI) |
| (2) B9 Ambient Air Temperature Sensor |
| (3) M96B Active Grille Air Shutter Actuator 2 (WMI) |

### Active Grille Air Shutter (VTI)



| Items |
|---|
| (1) M96A Active Grille Air Shutter Actuator 1 (VTI) |
| (2) B9 Ambient Air Temperature Sensor |

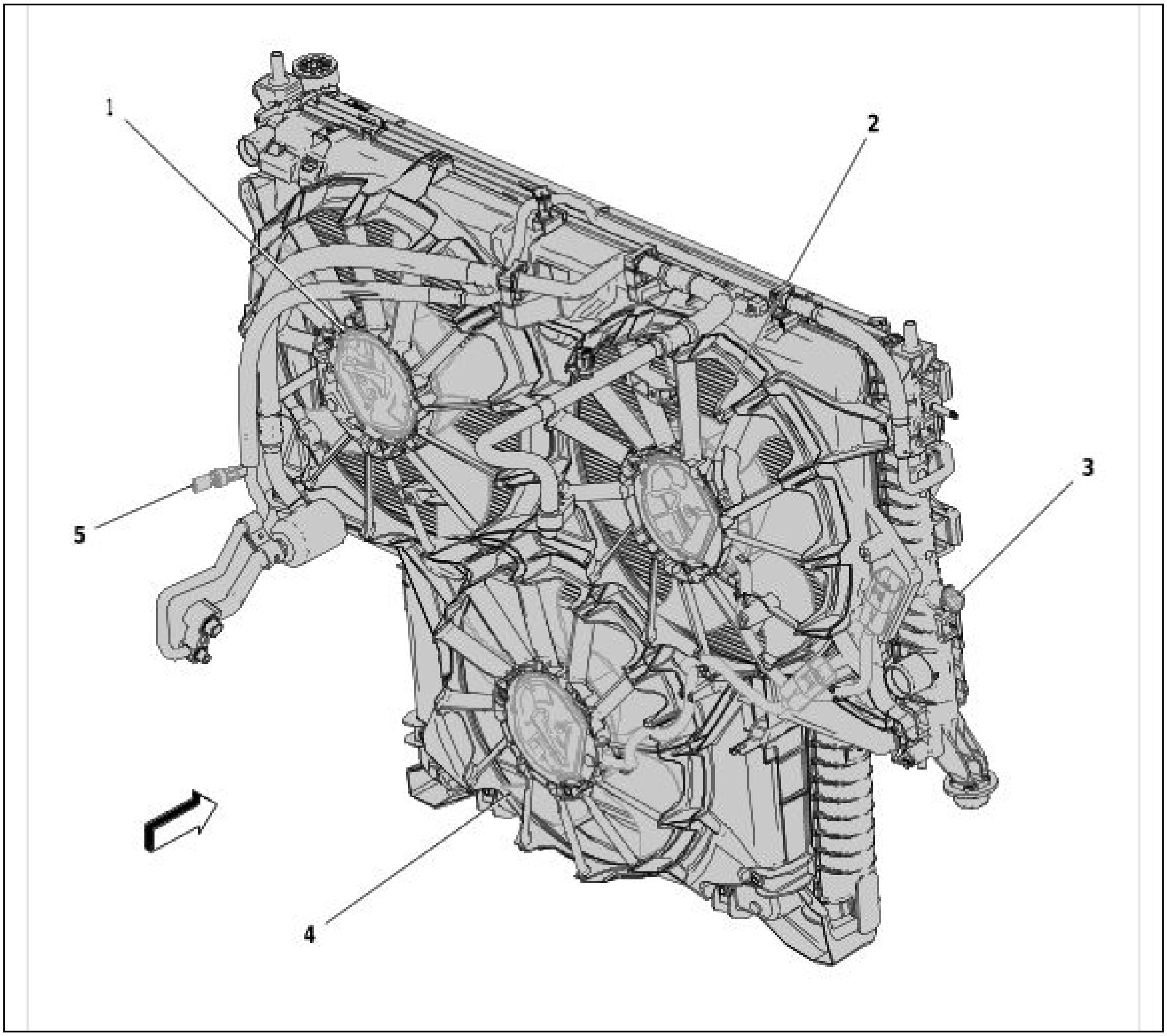
## Radiator Components (L84 / L87)



6682034

| Items |
|---|
| (1) G10L Cooling Fan Motor - Left |
| (2) B1 Air Conditioning Refrigerant Pressure Sensor |
| (3) G10R Cooling Fan Motor - Right |

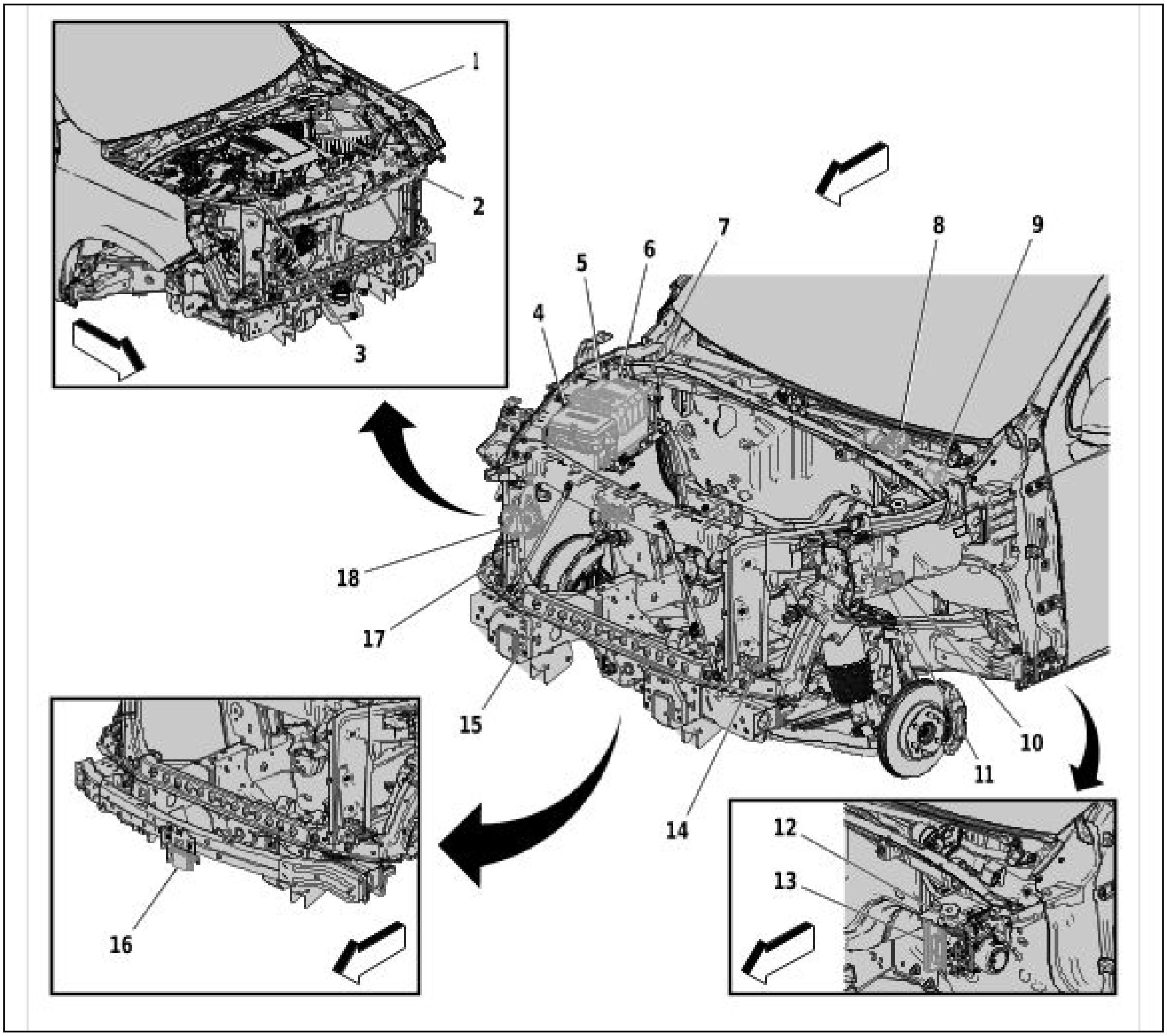
## Radiator Components (LZ0)



6682035

| Items |
|---|
| (1) G10L Cooling Fan Motor - Left |
| (2) G10R Cooling Fan Motor - Right |
| (3) B203 Radiator Coolant Temperature Sensor (LZ0) |
| (4) G10LW Cooling Fan Motor - Lower (LZ0) |
| (5) B1 Air Conditioning Refrigerant Pressure Sensor |

## Engine Compartment Components - Top

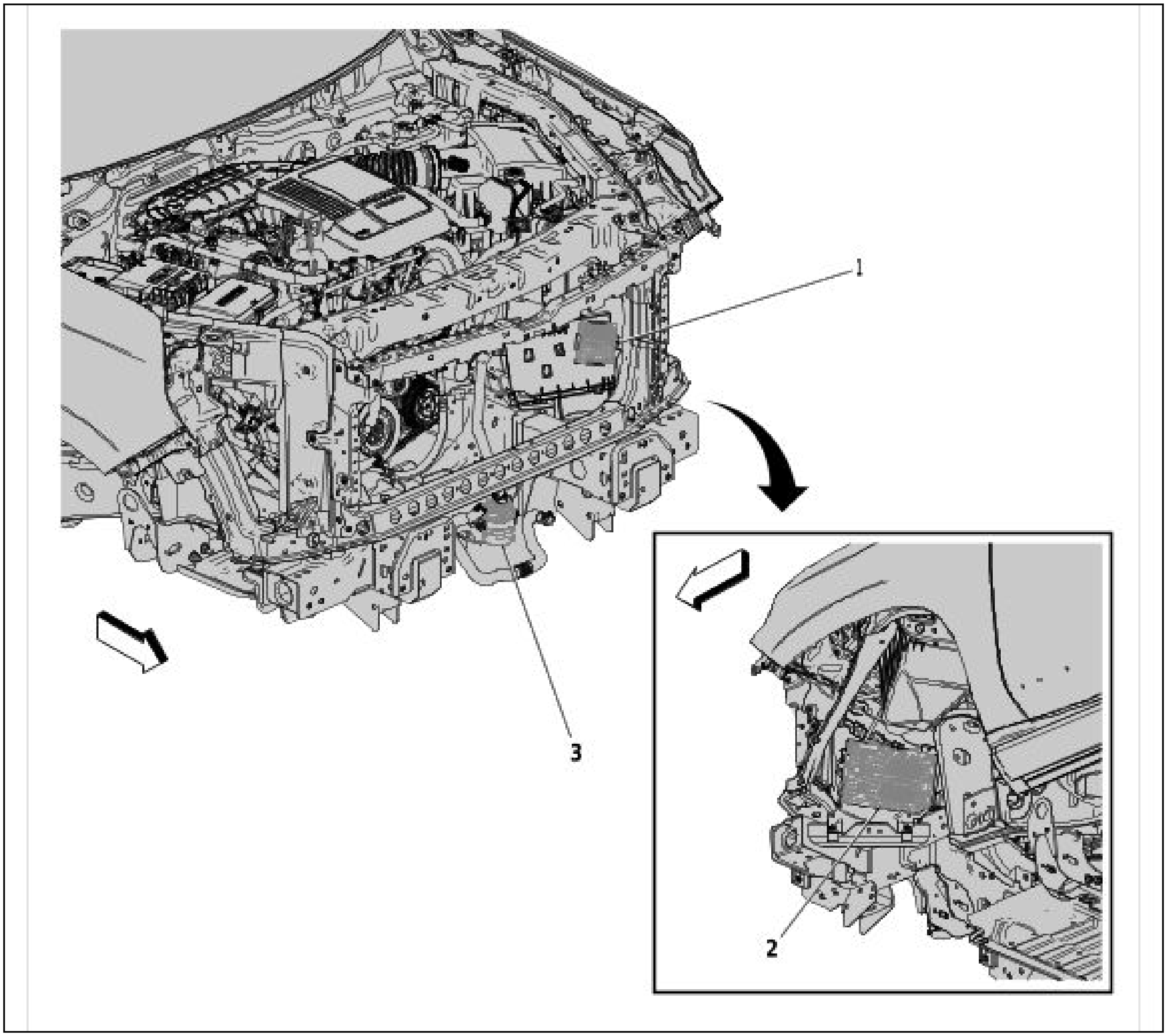


6682036

| Items |
|---|
| (1) K69 Transfer Case Control Module (NP0 / NQH) |
| (2) B75 Mass Airflow Sensor |
| (3) B34K Charge Air Cooler Coolant Temperature Sensor - Inlet (LZ0) |
| (4) X50A Engine Wiring Harness Junction Block |
| (5) X50B Battery Distribution Engine Compartment Fuse Block |
| (6) B110 Battery Monitor Module |
| (7) C1 Battery |
| (8) M75 Windshield Wiper Motor |
| (9) P25 Content Theft Deterrent Alarm (UTR) |
| (10) B118 Windshield Washer Solvent Container Level Sensor |

| Items |
|---|
| (11) G24 Windshield Washer Pump |
| (12) B20A Brake Fluid Level Indicator Switch |
| (13) K160 Brake System Control Module |
| (14) B58L Airbag Front End Discriminating Sensor - Left |
| (15) B55 Engine Compartment Cover Switch |
| (16) B233B Forward Range Radar Sensor - Long Range (UGN) |
| (17) B58R Airbag Front End Discriminating Sensor - Right |
| (18) P13 Horn |

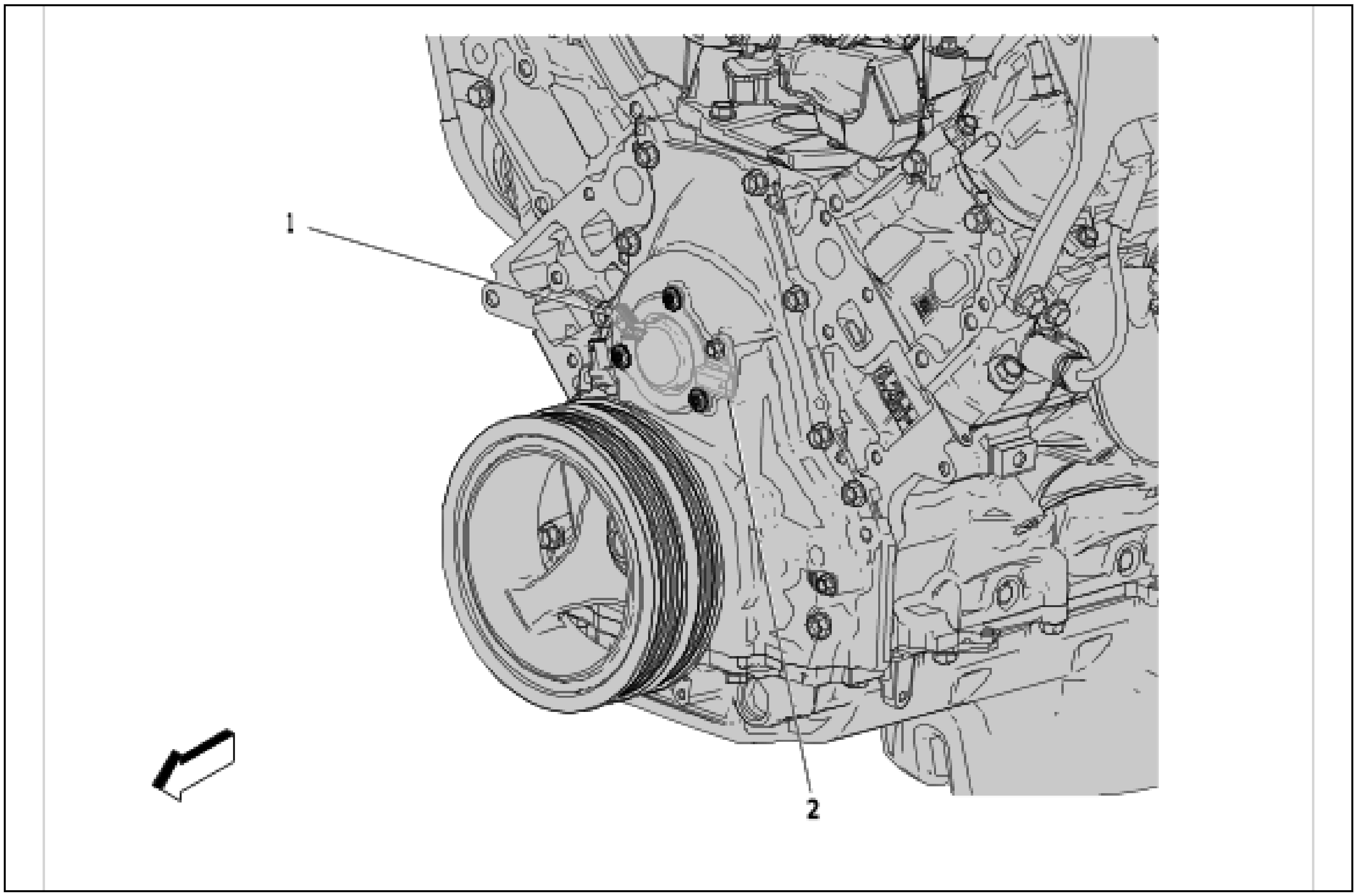
### Engine Compartment Components - Bottom



6685738

| Items |
|---|
| (1) K71 Transmission Control Module |
| (2) K20 Engine Control Module |
| (3) M10 Charge Air Cooler Coolant Pump (LZ0) |

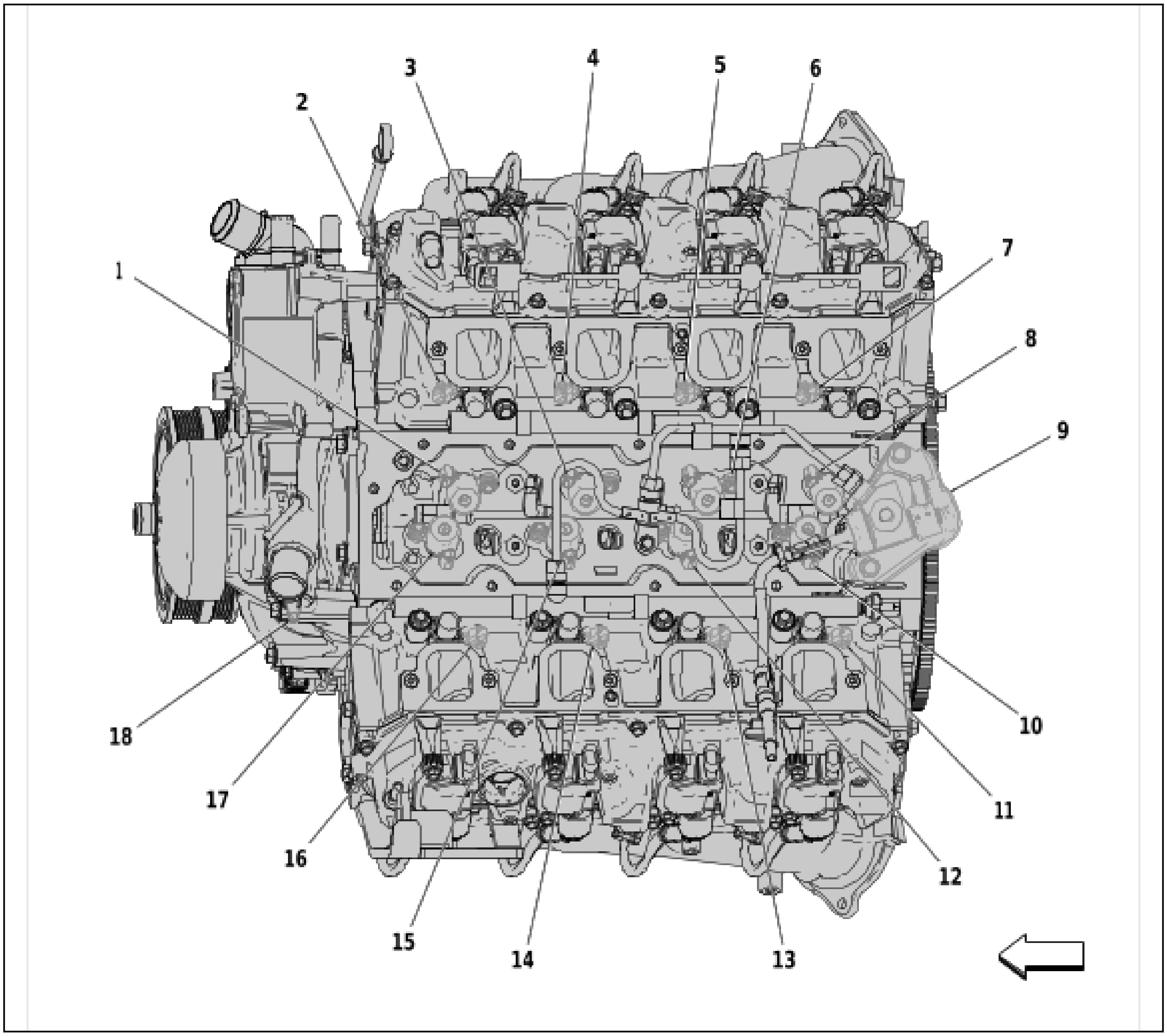
### Engine Components - Front (L84 / L87)



6666115

| Items |
|---|
| (1) Q6F Camshaft Position Actuator Solenoid Valve - Intake (L84 / L87) |
| (2) B23 Camshaft Position Sensor (L84 / L87) |

## Engine Components - Top (L84 / L87)

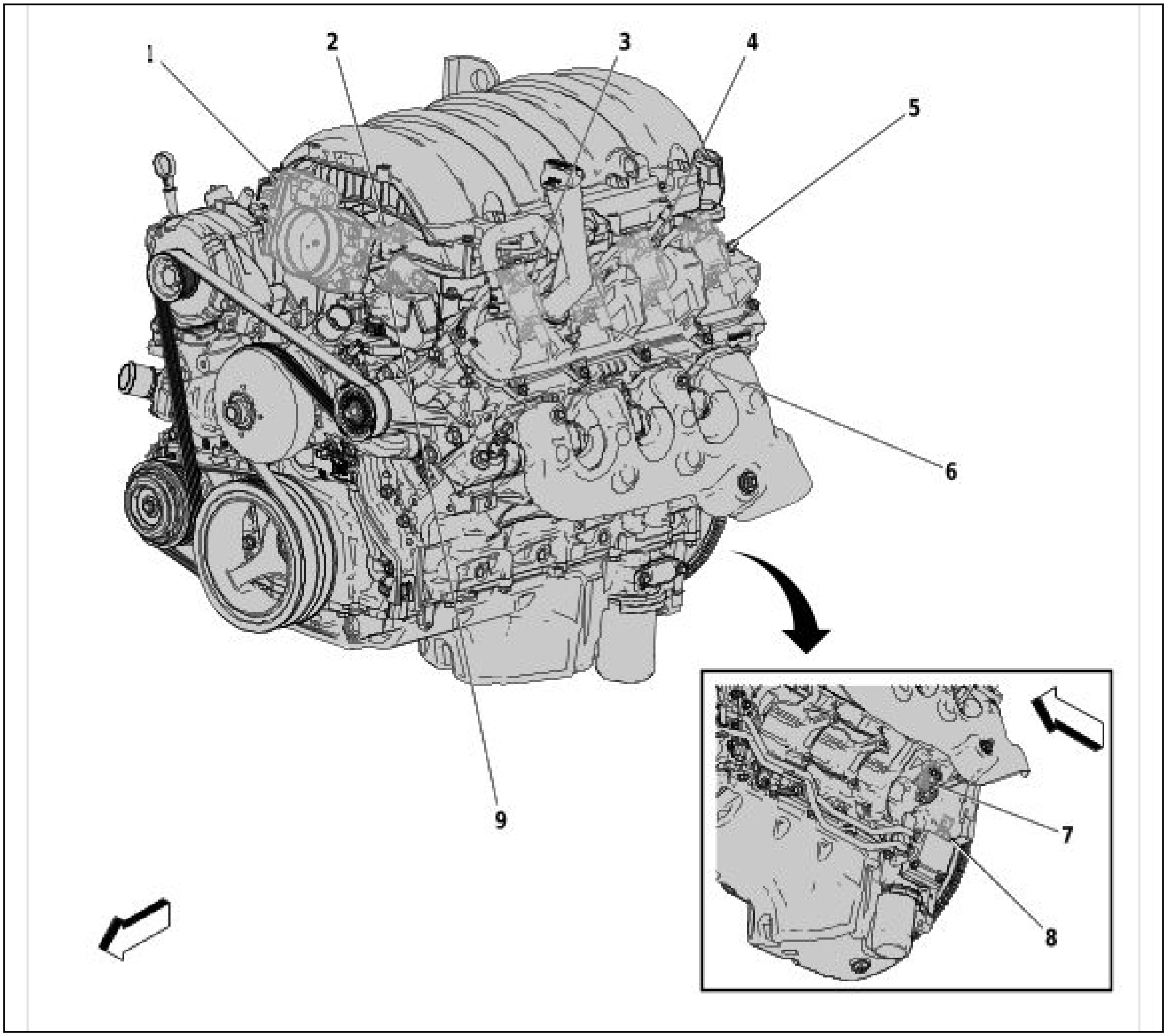


6666116

| Items |
|---|
| (1) Q83AB Valve Lifter Oil Solenoid Valve - Cylinder 2 (L84 / L87) |
| (2) Q17B Fuel Injector 2 |
| (3) Q83AD Valve Lifter Oil Solenoid Valve - Cylinder 4 (L84 / L87) |
| (4) Q17D Fuel Injector 4 |
| (5) Q17F Fuel Injector 6 |
| (6) Q83AF Valve Lifter Oil Solenoid Valve - Cylinder 6 (L84 / L87) |
| (7) Q17H Fuel Injector 8 (L84 / L87) |
| (8) Q83AH Valve Lifter Oil Solenoid Valve - Cylinder 8 (L84 / L87) |
| (9) G18 Fuel Pump - High Pressure |

| Items |
|---|
| (10) Q83AG Valve Lifter Oil Solenoid Valve - Cylinder 7 (L84 / L87) |
| (11) Q17G Fuel Injector 7 (L84 / L87) |
| (12) Q83AE Valve Lifter Oil Solenoid Valve - Cylinder 5 (L84 / L87) |
| (13) Q17E Fuel Injector 5 |
| (14) Q17C Fuel Injector 3 |
| (15) Q83AC Valve Lifter Oil Solenoid Valve - Cylinder 3 (L84 / L87) |
| (16) Q17A Fuel Injector 1 |
| (17) Q83AA Valve Lifter Oil Solenoid Valve - Cylinder 1 (L84 / L87) |
| (18) B34 Engine Coolant Temperature Sensor |

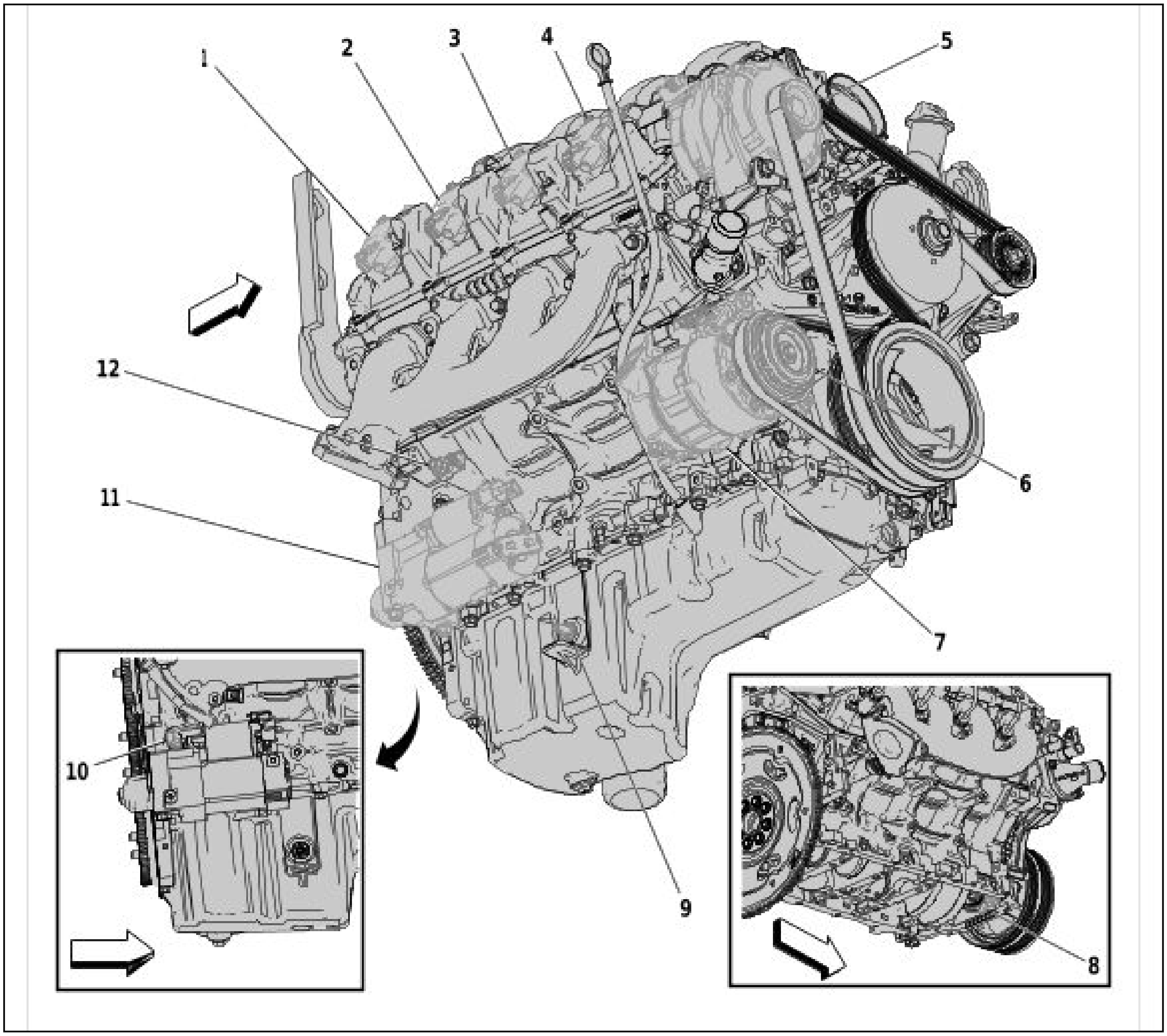
### Engine Components - Left (L84 / L87)



6666117

| Items |
|---|
| (1) Q38 Throttle Body (L84 / L87) |
| (2) B74 Manifold Absolute Pressure Sensor (L84 / L87) |
| (3) T8A Ignition Coil 1 (L84 / L87) |
| (4) T8E Ignition Coil 5 (L84 / L87) |
| (5) T8G Ignition Coil 7 (L84 / L87) |
| (6) T8C Ignition Coil 3 (L84 / L87) |
| (7) B68A Knock Sensor 1 (L84 / L87) |
| (8) B37B Engine Oil Pressure Sensor |
| (9) Q12 Evaporative Emission Canister Purge Solenoid Valve (L84 / L87) |

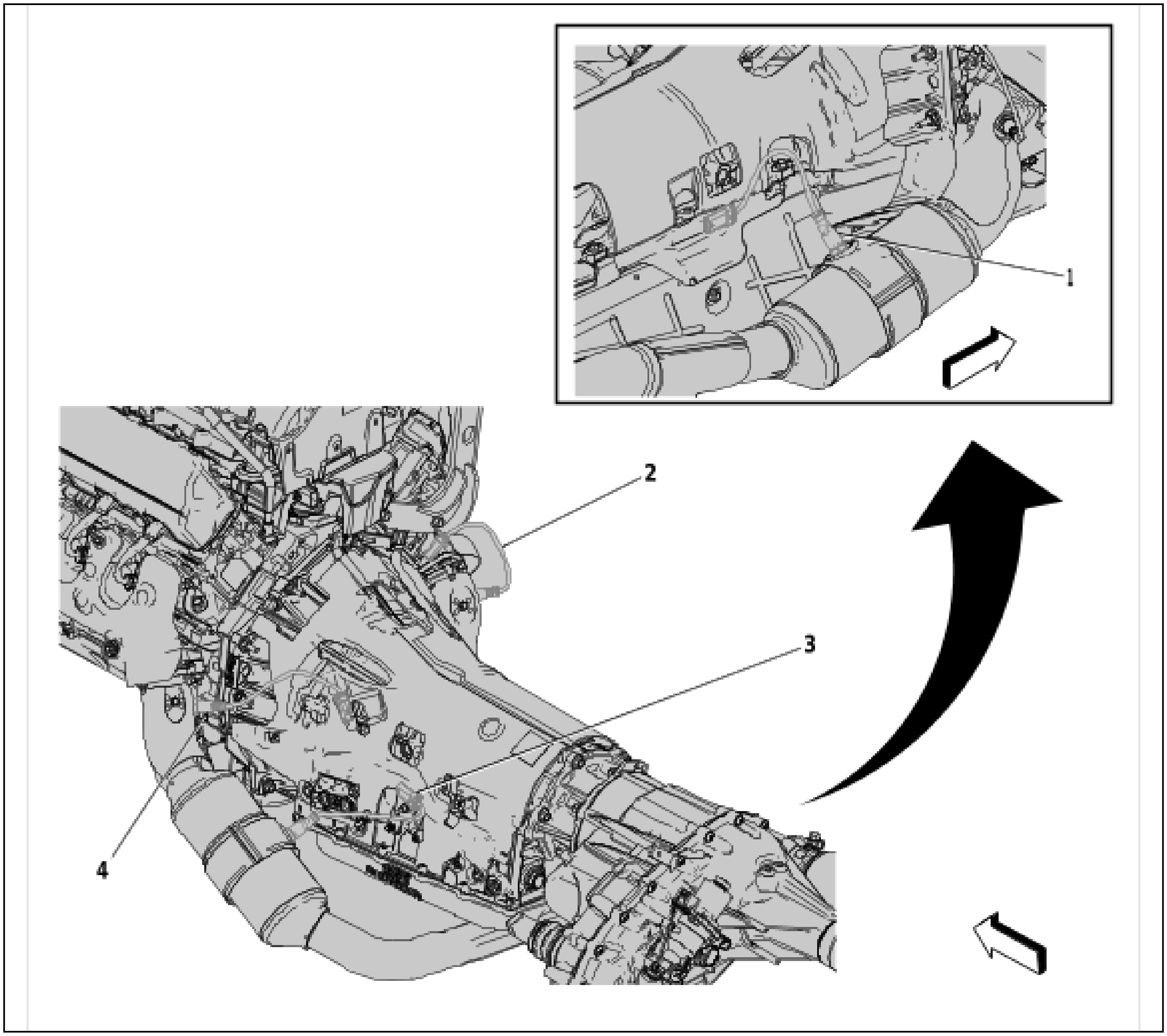
### Engine Components - Right (L84 / L87)



6666118

| Items |
|---|
| (1) T8H Ignition Coil 8 (L84 / L87) |
| (2) T8F Ignition Coil 6 (L84 / L87) |
| (3) T8D Ignition Coil 4 (L84 / L87) |
| (4) T8B Ignition Coil 2 (L84 / L87) |
| (5) G13 Generator |
| (6) Q2 Air Conditioning Clutch |
| (7) Q46 Air Conditioning Compressor Solenoid Valve |
| (8) Q44 Engine Oil Pressure Control Solenoid Valve (L87 / LZ0) |
| (9) B35 Engine Oil Level Indicator Switch (L84 / L87) |
| (10) B26 Crankshaft Position Sensor |
| (11) M64 Starter |
| (12) B68B Knock Sensor 2 (L84 / L87) |

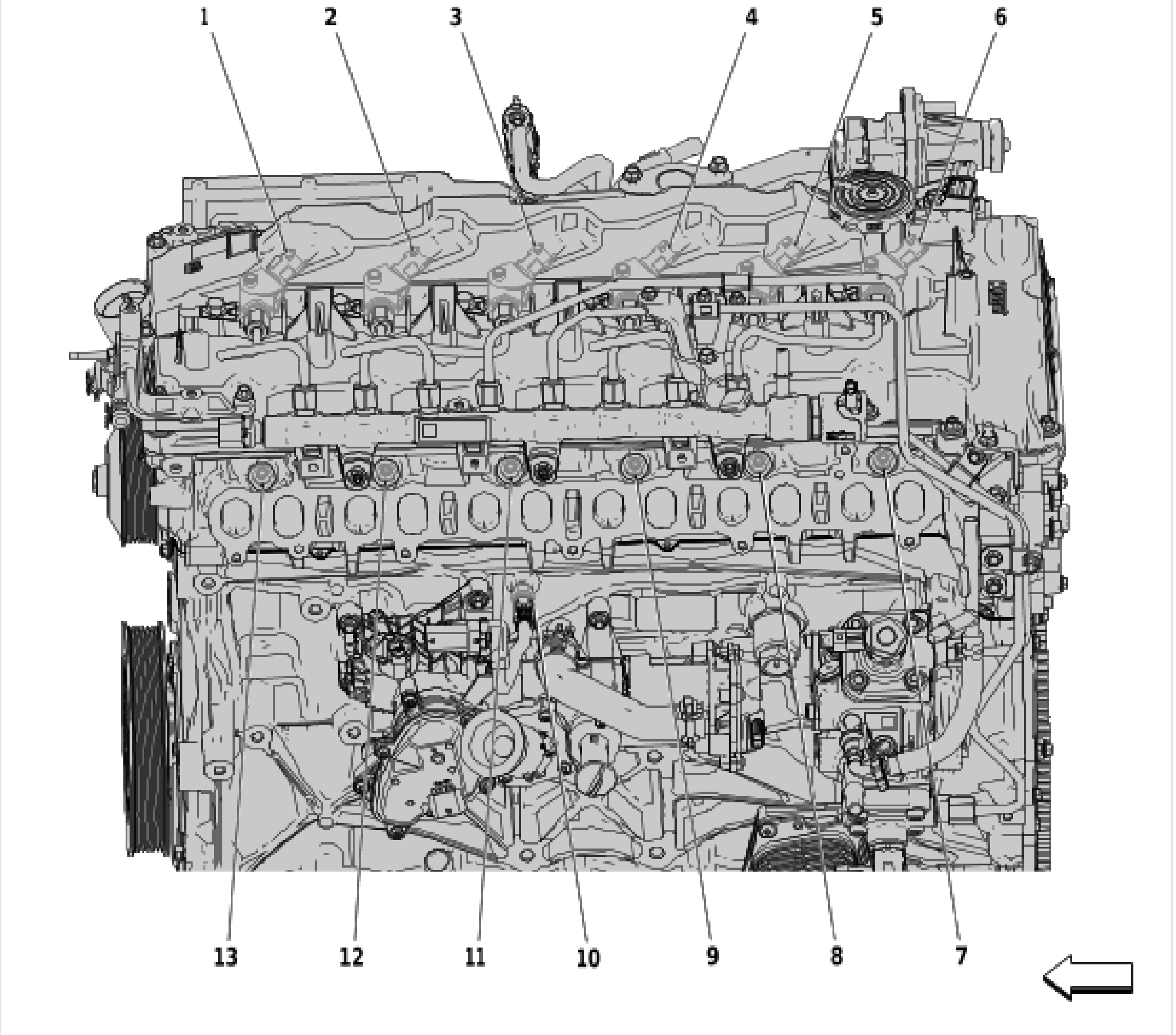
## Engine Components - Oxygen Sensors (L84 / L87)



6666119

| Items |
|---|
| (1) B52F Heated Oxygen Sensor - Bank 2 Sensor 2 (L84 / L87) |
| (2) B52E Heated Oxygen Sensor - Bank 2 Sensor 1 (L84 / L87) |
| (3) B52D Heated Oxygen Sensor - Bank 1 Sensor 2 (L84 / L87) |
| (4) B52C Heated Oxygen Sensor - Bank 1 Sensor 1 (L84 / L87) |

### Engine Components - Top (LZ0)

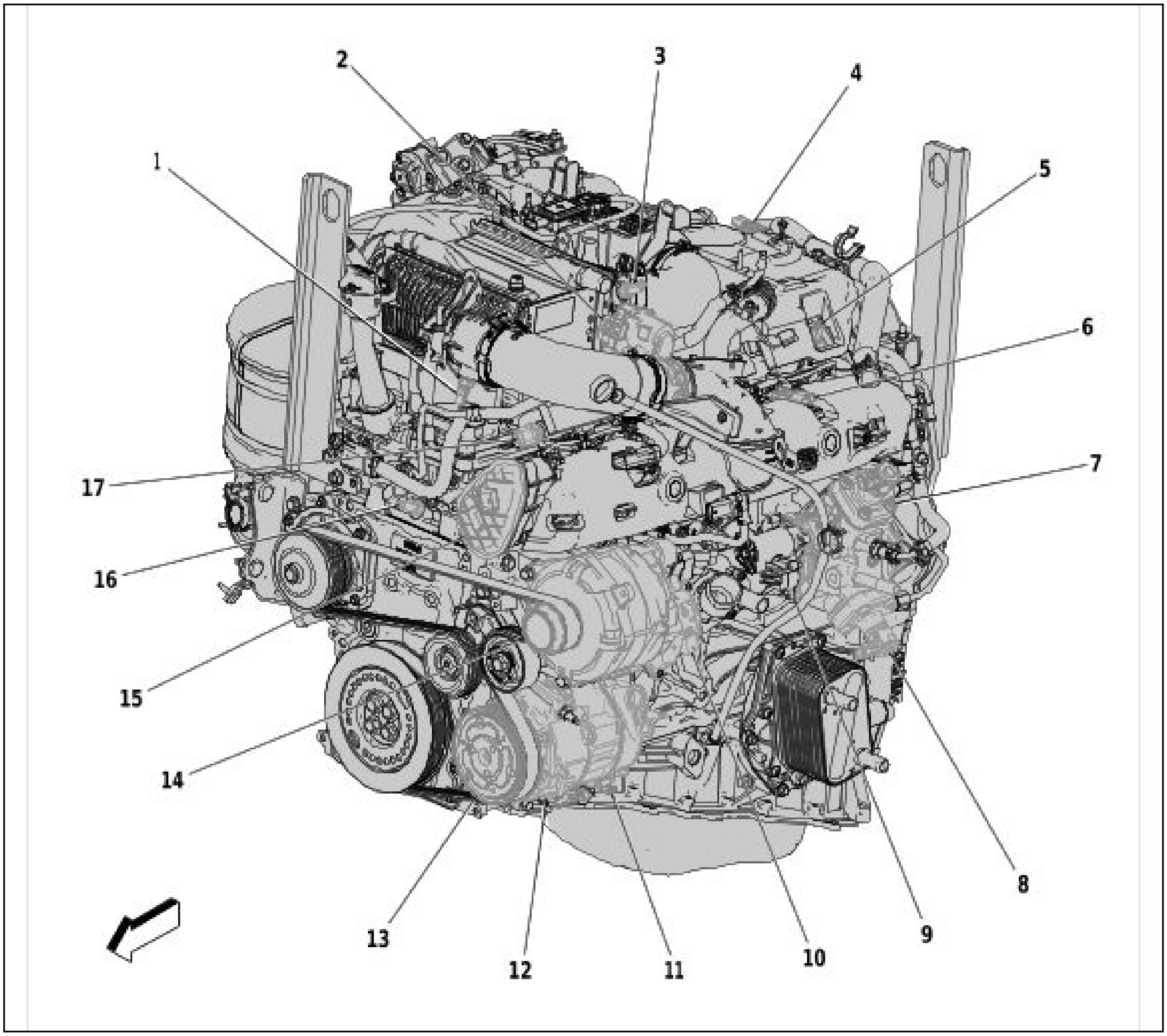


6666120

| Items |
|---|
| (1) Q17A Fuel Injector 1 |
| (2) Q17B Fuel Injector 2 |
| (3) Q17C Fuel Injector 3 |
| (4) Q17D Fuel Injector 4 |

| Items |
|---|
| (5) Q17E Fuel Injector 5 |
| (6) Q17F Fuel Injector 6 |
| (7) E12F Glow Plug 6 (LZ0) |
| (8) E12E Glow Plug 5 (LZ0) |
| (9) E12D Glow Plug 4 (LZ0) |
| (10) B34 Engine Coolant Temperature Sensor |
| (11) E12C Glow Plug 3 (LZ0) |
| (12) E12B Glow Plug 2 (LZ0) |
| (13) E12A Glow Plug 1 (LZ0) |

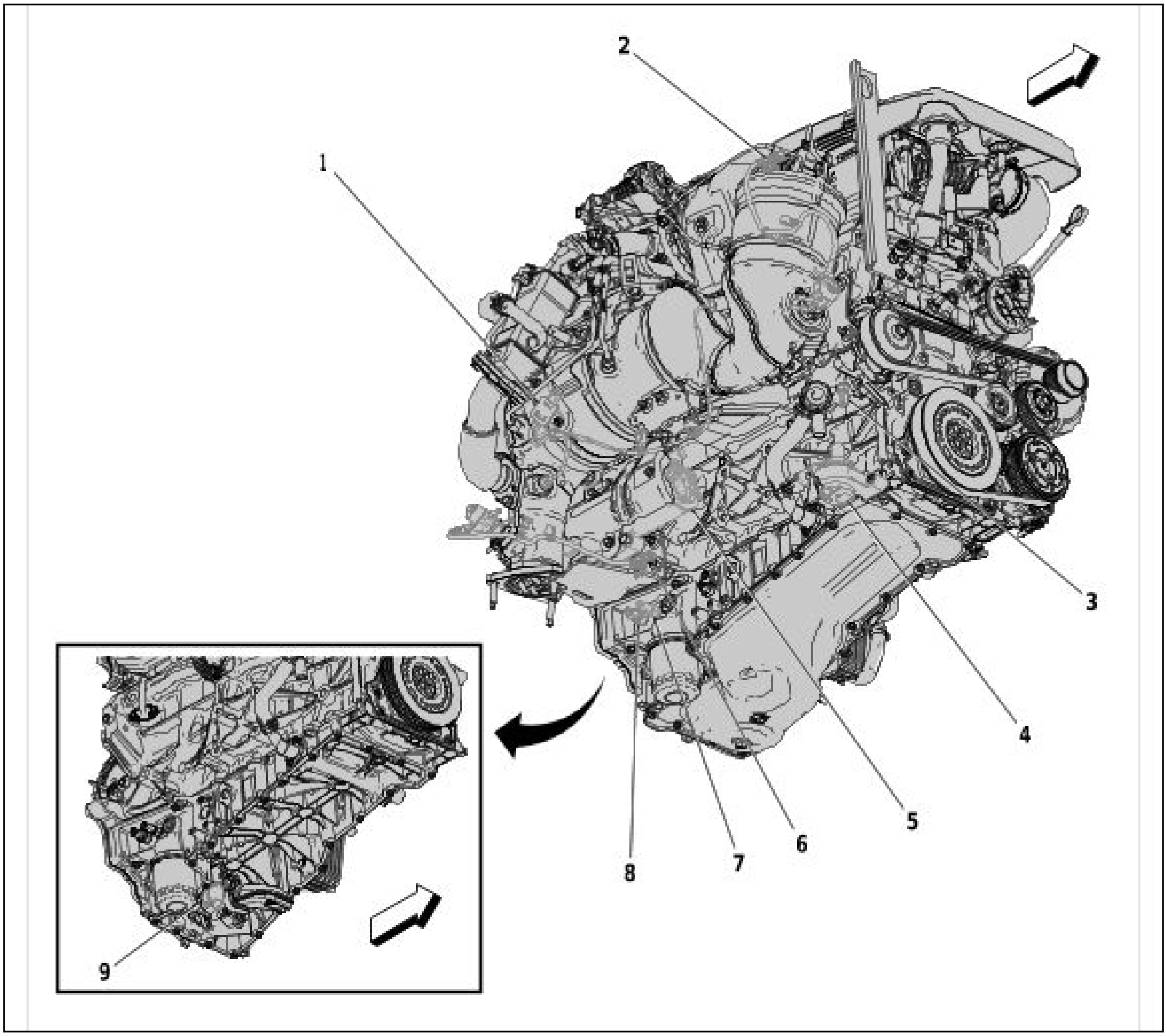
### Engine Components - Left Front (LZ0)



6685739

| Items |
|---|
| (1) B193B Charge Air Cooler Air Temperature Sensor - Outlet (LZ0) |
| (2) Q20 Intake Airflow Control Valve (LZ0) |
| (3) B193A Charge Air Cooler Air Temperature Sensor - Inlet (LZ0) |
| (4) B321 Crankcase Pressure Sensor (LZ0) |
| (5) Q18B Fuel Pressure Regulator 2 (LZ0) |
| (6) B65 Manifold Absolute Pressure and Intake Air Temperature Sensor (LZ0) |
| (7) Q18C Fuel Pressure Regulator 3 (LZ0) |
| (8) Q18A Fuel Pressure Regulator 1 (LZ0) |
| (9) Q74 Engine Coolant Bypass Valve (LZ0) |
| (10) Q97M Engine Coolant Flow Control Valve - Main (LZ0) |
| (11) Q46 Air Conditioning Compressor Solenoid Valve |
| (12) G1 Air Conditioning Compressor |
| (13) Q2 Air Conditioning Clutch |
| (14) G13 Generator |
| (15) Q22 Intake Manifold Tuning Solenoid Valve (LZ0) |
| (16) B96 Cylinder Head Temperature Sensor (LZ0) |
| (17) B47B Fuel Rail Pressure Sensor (LZ0) |

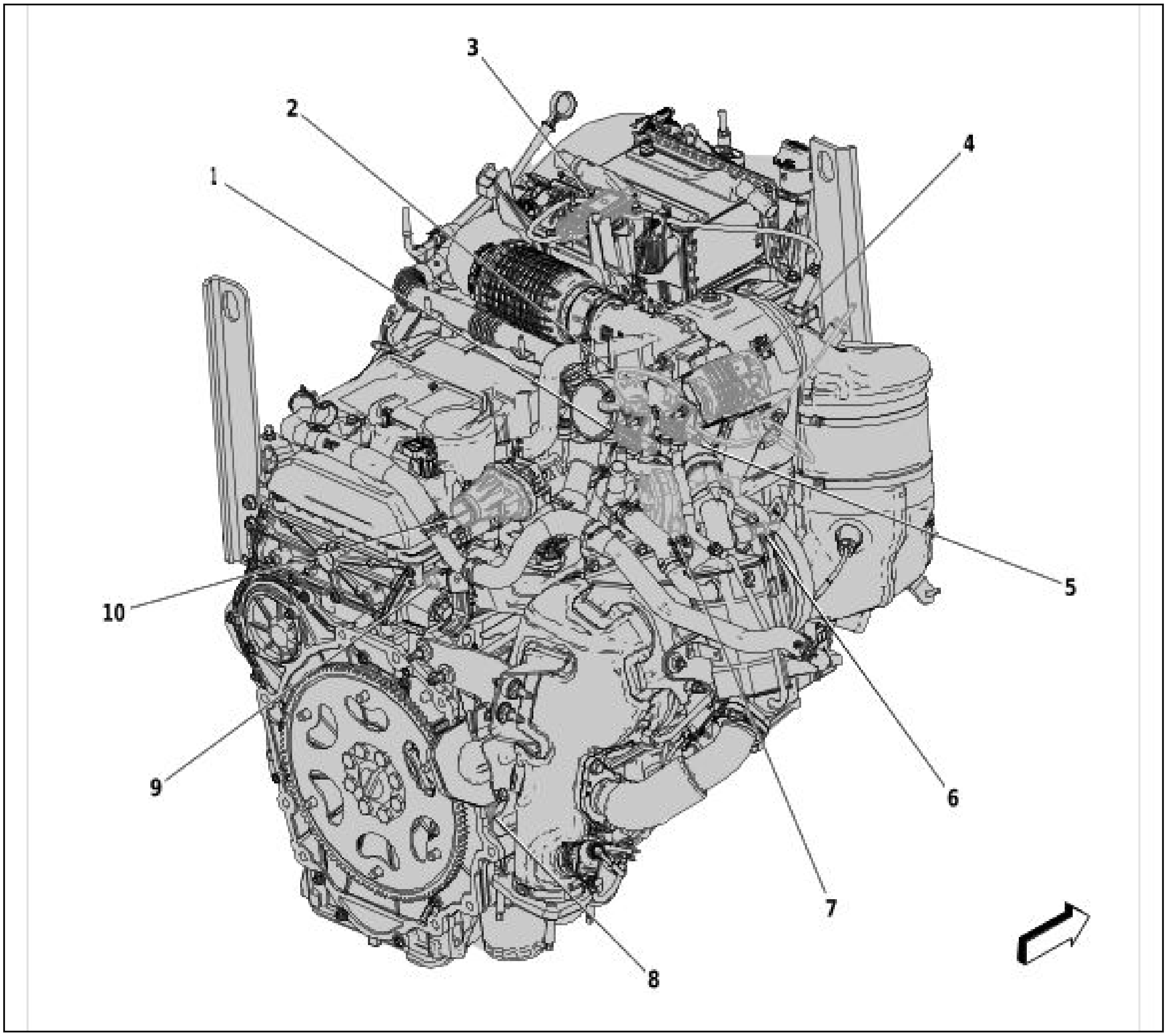
## Engine Components - Right Front (LZ0)



6685740

| Items |
|---|
| (1) B359 Exhaust Gas Temperature Sensor Module (LZ0) |
| (2) Q61 Reductant Fluid Injector (LZ0) |
| (3) B34B Engine Coolant Temperature Sensor 2 (LZ0) |
| (4) G17 Heater Coolant Pump |
| (5) M64 Starter |
| (6) Q61B Reductant Fluid Injector 2 (LZ0) |
| (7) B36 Engine Oil Temperature Sensor (LZ0) |
| (8) B37B Engine Oil Pressure Sensor |
| (9) Q44 Engine Oil Pressure Control Solenoid Valve (L87 / LZ0) |

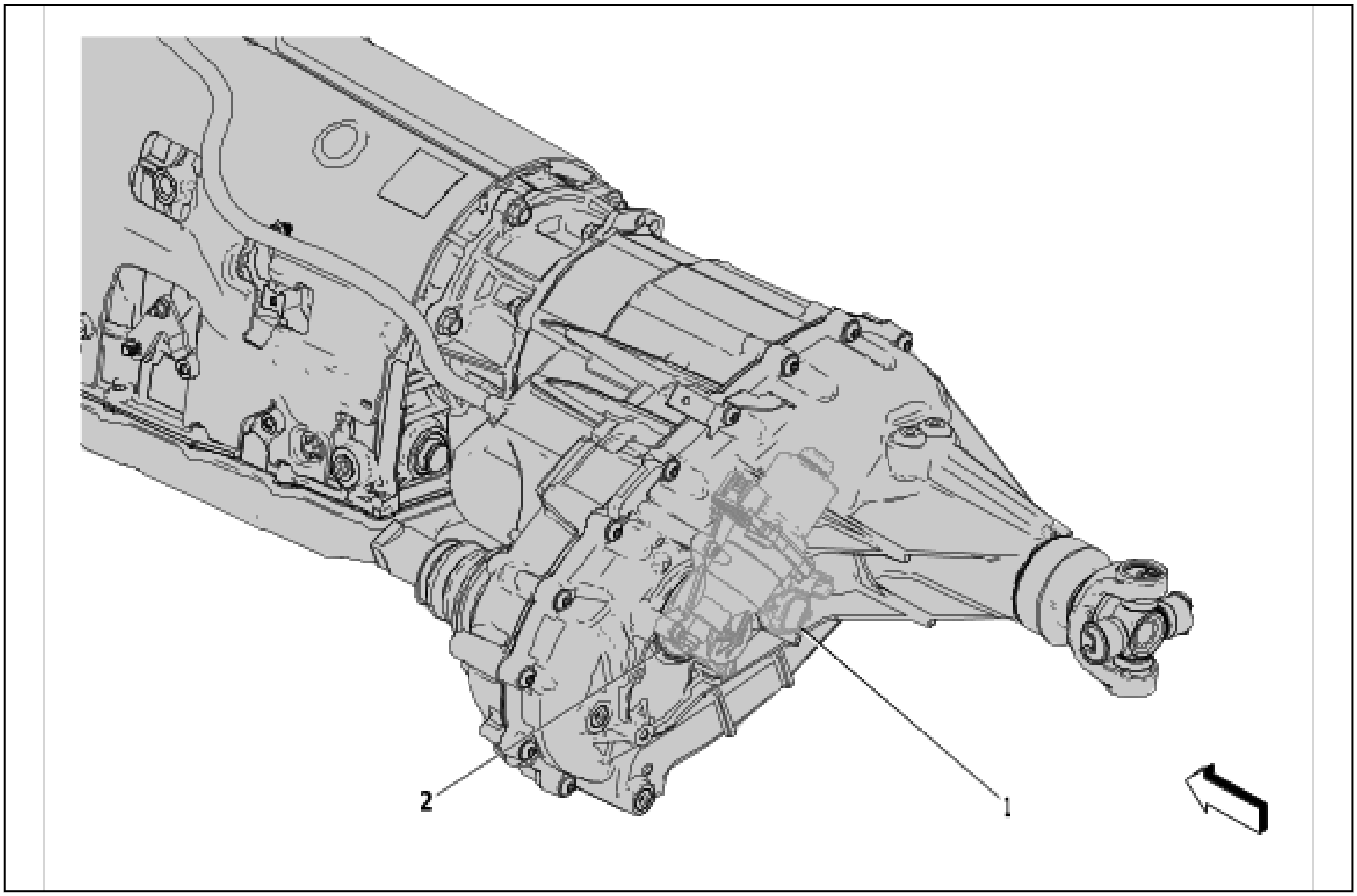
## Engine Components - Right Rear (LZ0)



6685741

| Items |
|---|
| (1) B345P Exhaust Pressure Differential Sensor - Particulate Filter (LZ0) |
| (2) B359B Exhaust Gas Temperature Sensor Module 2 (LZ0) |
| (3) B195A Nitrogen Oxides Sensor 1 (LZ0) |
| (4) M103 Turbocharger Vane Position Actuator (LZ0) |
| (5) B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation (LZ0) |
| (6) B130C Exhaust Gas Recirculation Temperature Sensor 3 (LZ0) |
| (7) Q14B Exhaust Gas Recirculation Valve 2 (LZ0) |
| (8) B26 Crankshaft Position Sensor |
| (9) B23E Camshaft Position Sensor - Exhaust (LZ0) |
| (10) Q14A Exhaust Gas Recirculation Valve 1 (LZ0) |

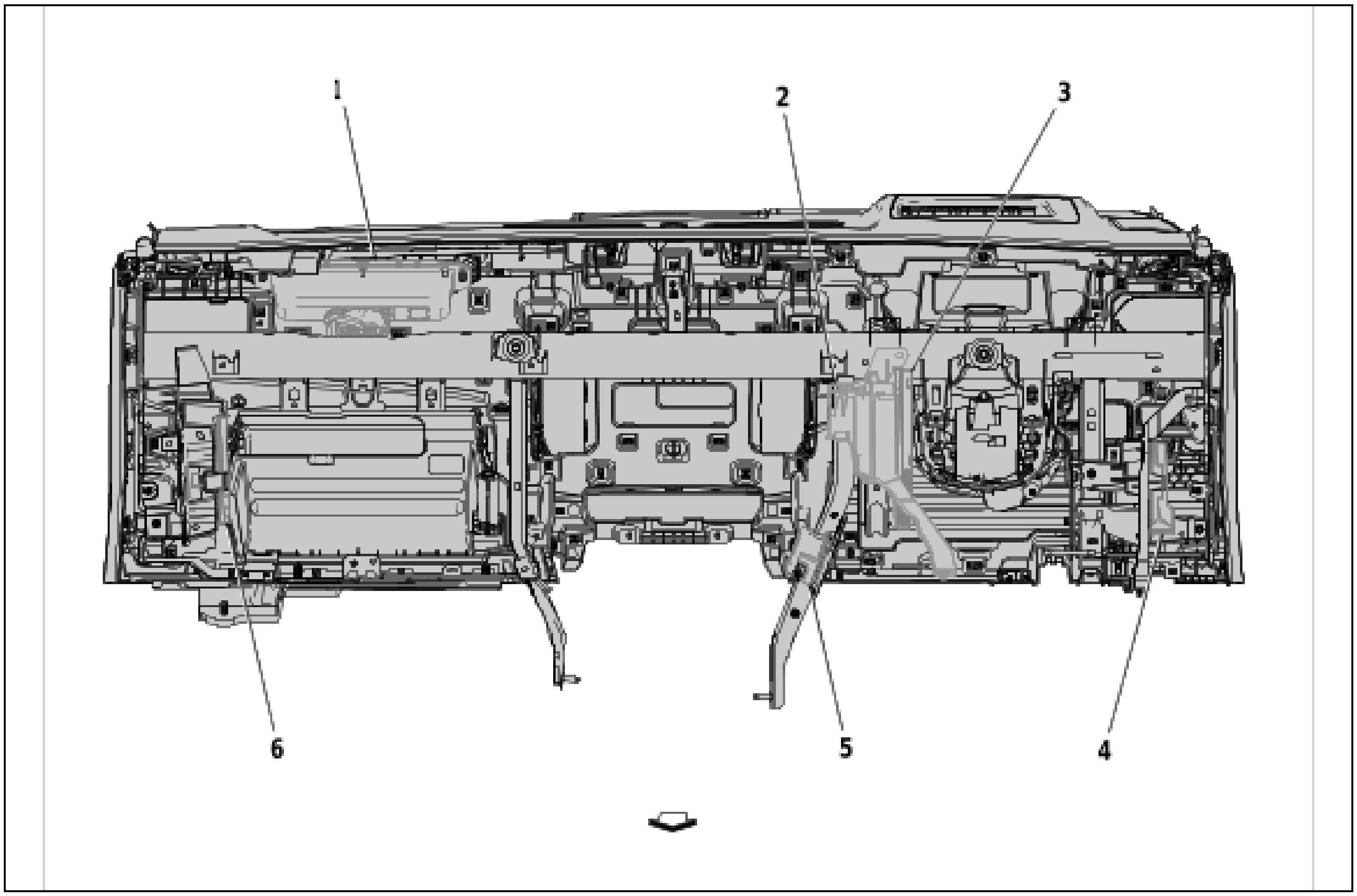
## Transfer Case Components (NP0 / NQH)



6666248

| Items |
|---|
| (1) B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor (NP0 / NQH) |
| (2) A16 Transfer Case Four Wheel Drive Actuator (NP0 / NQH) |

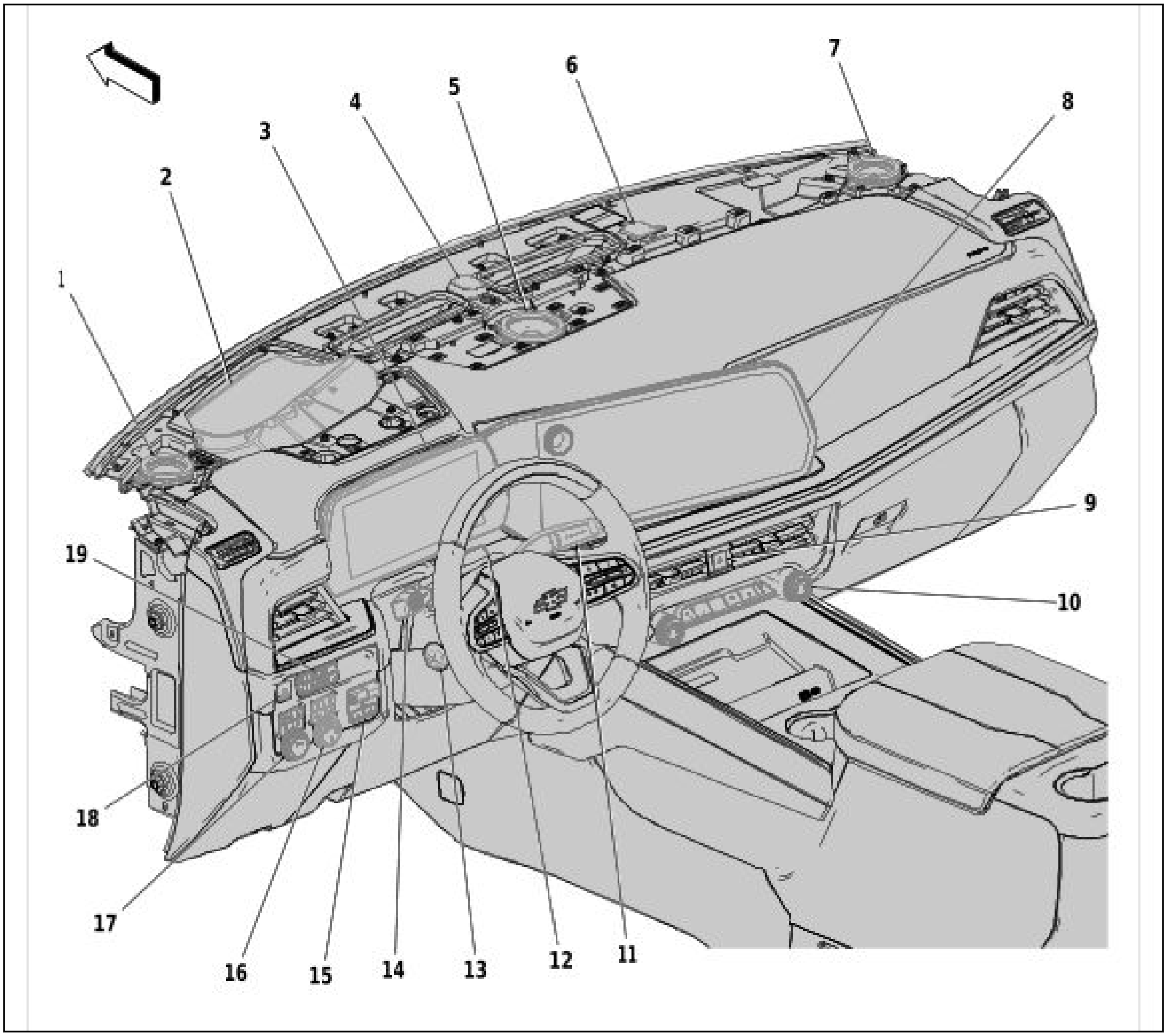
### Behind the Instrument Panel Components



6686790

| Items |
|---|
| (1) F101 Instrument Panel Airbag |
| (2) K56 Serial Data Gateway Module |
| (3) K73 Telematic Control Module |
| (4) K9 Body Control Module |
| (5) P50 Regulatory Emergency Call Backup Speaker (UER) |
| (6) A11 Radio |

## Front of Instrument Panel Components (- AZ3)

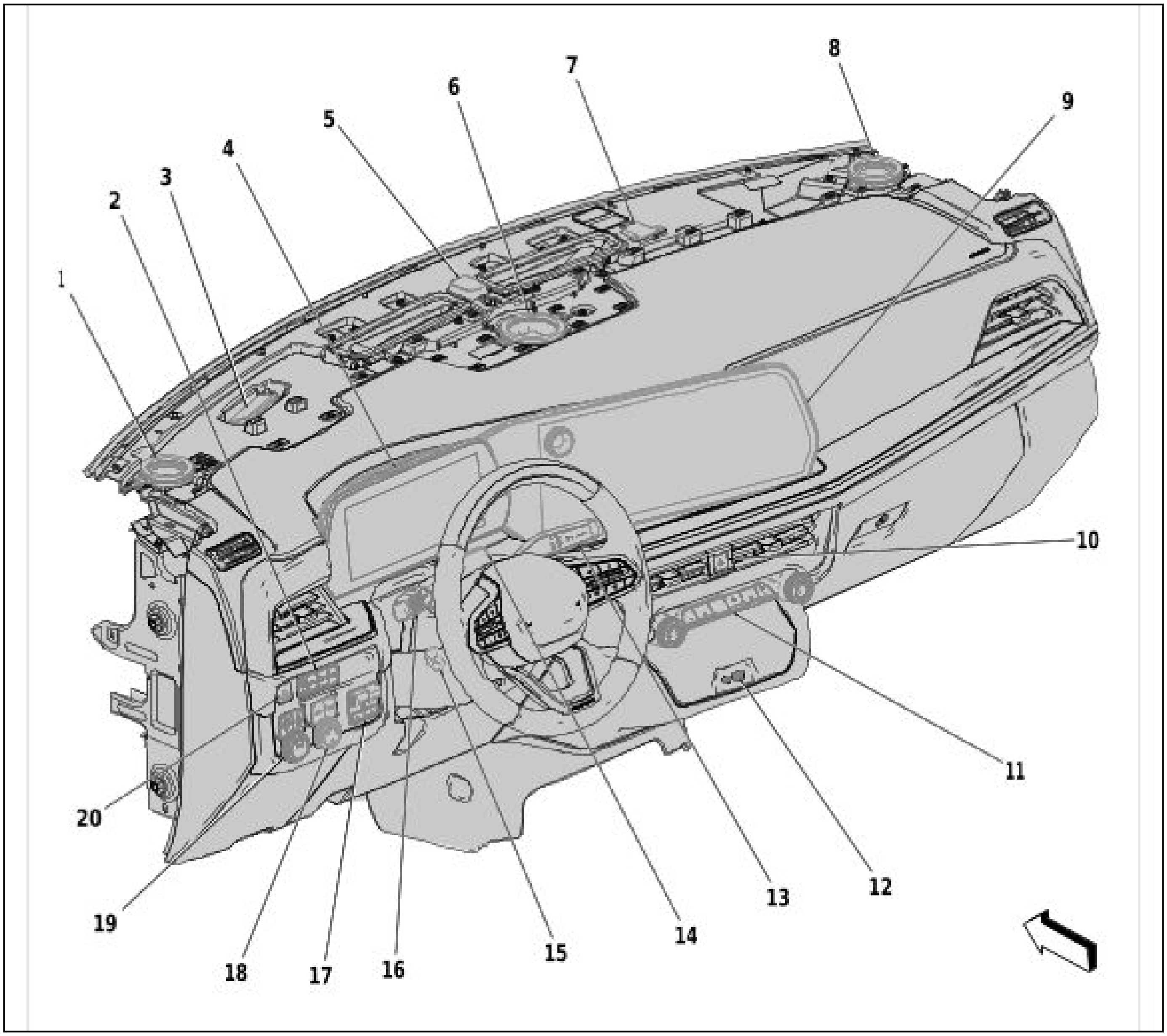


6666250

| Items |
|---|
| (1) P19J Radio Front Speaker - Instrument Panel Left (UQF) |
| (2) P19H Radio Windshield Side Garnish Molding Speaker - Left Front (UQS) |
| (3) P29 Head-Up Display (UV6) |
| (4) P16 Instrument Panel Cluster Control Module |
| (5) B10D Sun Load and Ambient Light and Security Indicator Sensor |
| (6) P19B Radio Front Center Speaker (UQS) |
| (7) T4TA Auxiliary Wireless Communication Interface Antenna |
| (8) P19W Radio Front Speaker - Instrument Panel Right (UQF) |
| (9) P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS) |

| Items |
|---|
| (10) A22 Radio Control |
| (11) S26 Hazard Warning Switch |
| (12) A26 Heater and Air Conditioning User Interface Control - Front |
| (13) S3B Automatic Transmission Electronic Control |
| (14) B292 Driver Monitoring Camera (UKL) |
| (15) S71 Steering Column Tilt Wheel and Telescope Switch (N38) |
| (16) S78 Turn Signal Switch |
| (17) S76 Trailer Brake Control Switch (JL1) |
| (18) S30 Headlamp Switch |
| (19) S126 Ride Control Switch |
| (20) S91 Parking Brake Control Switch |
| (21) S86 Vehicle Stability Control System Switch |

## Front of Instrument Panel Components (AZ3)

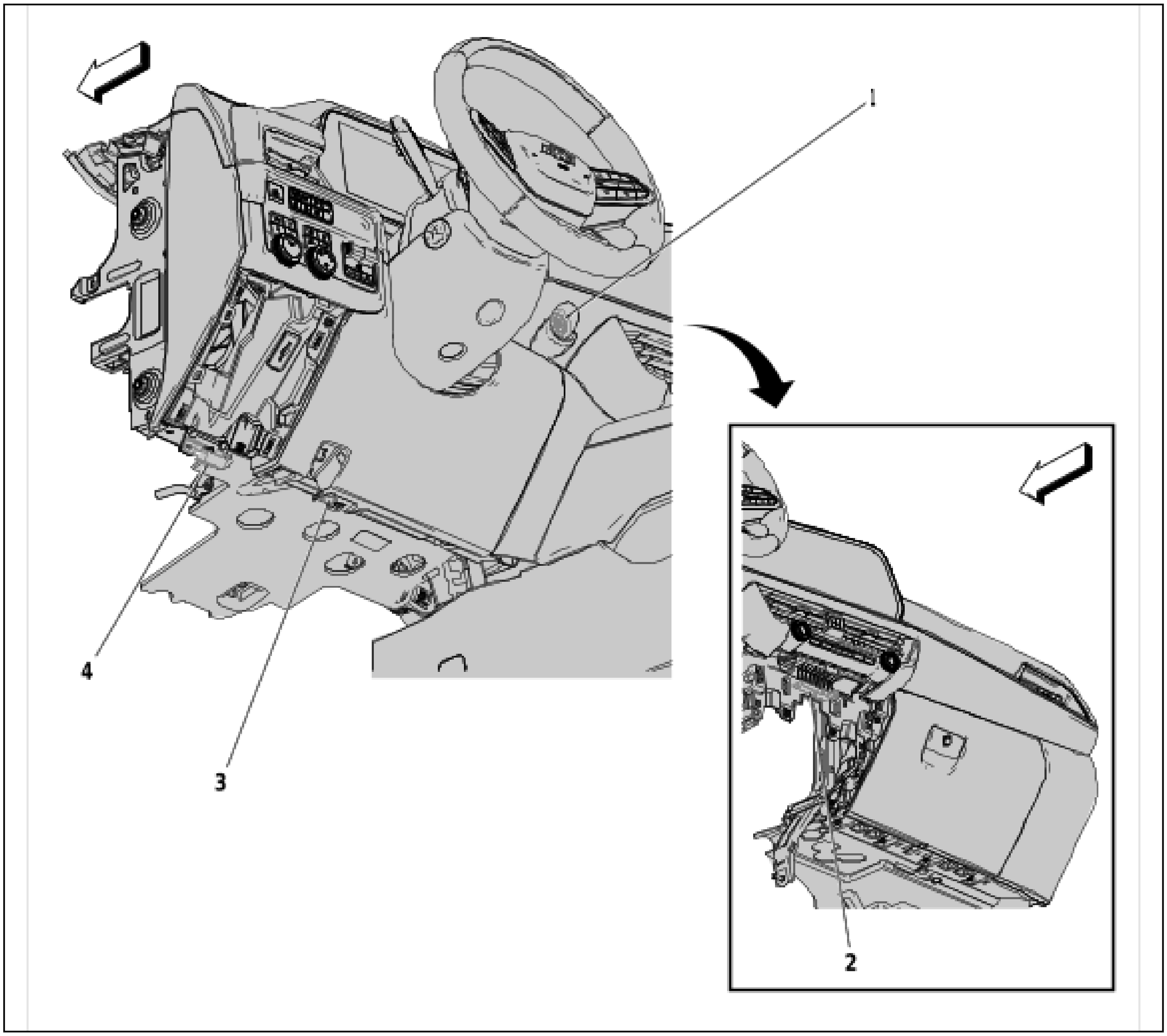


6666251

| Items |
|---|
| (1) P19J Radio Front Speaker - Instrument Panel Left (UQF) |
| (2) P19H Radio Windshield Side Garnish Molding Speaker - Left Front (UQS) |
| (3) S86 Vehicle Stability Control System Switch |
| (4) P43 Forward Collision Alert Display (UEU - UV6) |
| (5) P16 Instrument Panel Cluster Control Module |
| (6) B10D Sun Load and Ambient Light and Security Indicator Sensor |
| (7) P19B Radio Front Center Speaker (UQS) |
| (8) T4TA Auxiliary Wireless Communication Interface Antenna |
| (9) P19W Radio Front Speaker - Instrument Panel Right (UQF) |

| Items |
|---|
| (10) P19V Radio Windshield Side Garnish Molding Speaker - Right Front (UQS) |
| (11) A22 Radio Control |
| (12) S26 Hazard Warning Switch |
| (13) A26 Heater and Air Conditioning User Interface Control - Front |
| (14) X92IP USB 2 Port Receptacle - Instrument Panel (AZ3) |
| (15) S3B Automatic Transmission Electronic Control |
| (16) B292 Driver Monitoring Camera (UKL) |
| (17) S71 Steering Column Tilt Wheel and Telescope Switch (N38) |
| (18) S78 Turn Signal Switch |
| (19) S76 Trailer Brake Control Switch (JL1) |
| (20) S30 Headlamp Switch |
| (21) S126 Ride Control Switch |
| (22) S91 Parking Brake Control Switch |

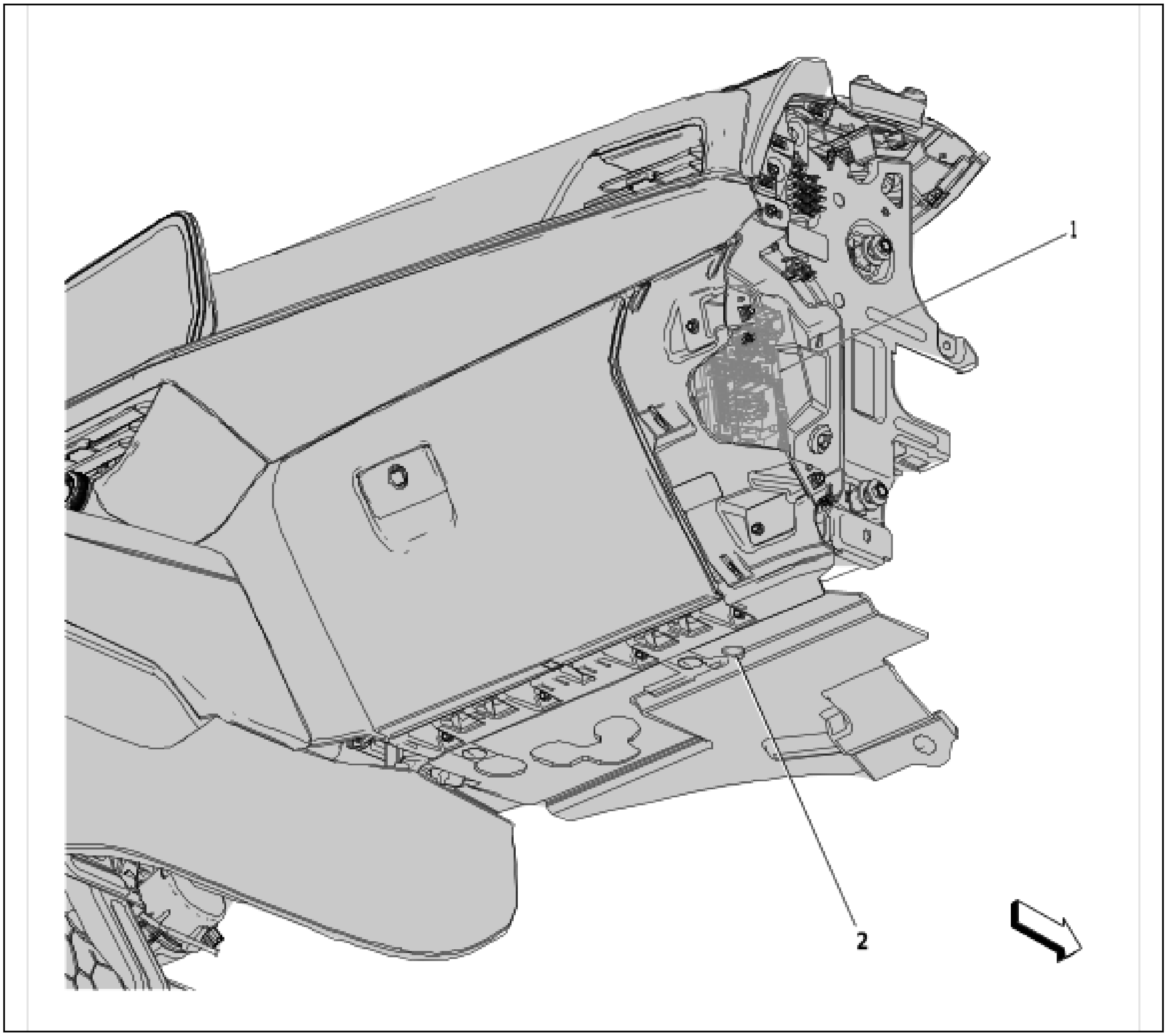
## Lower left of Instrument Panel Components



6666252

| Items |
|---|
| (1) S38 On/Off Vehicle Switch |
| (2) T10J Low Frequency Instrument Panel Antenna (5W4 / 9C1 / AZ3) |
| (3) E8VA Front Floor Courtesy Lamp - Left |
| (4) X84 Data Link Connector |

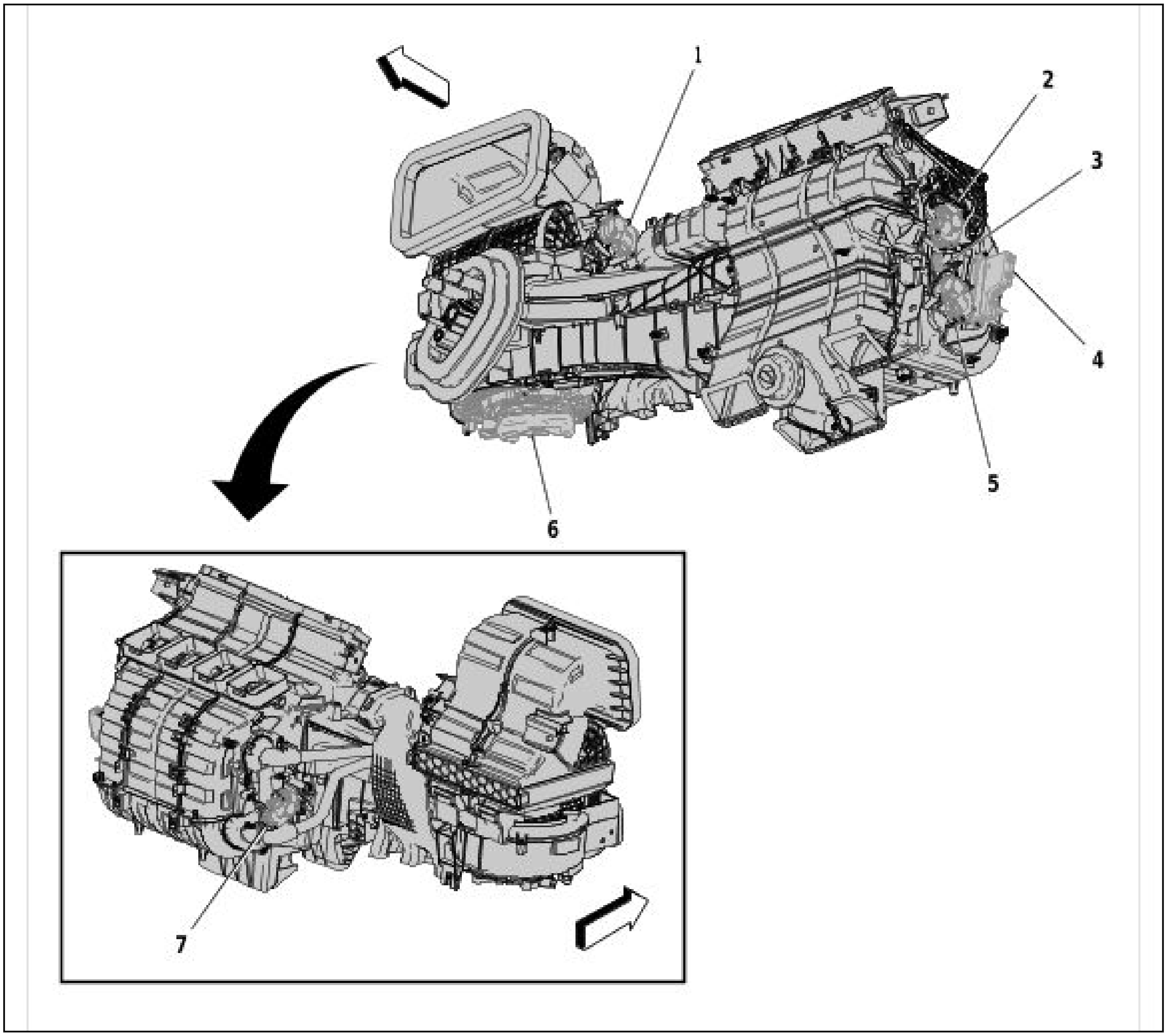
## Lower right of Instrument Panel Components



6666253

| Items |
|---|
| (1) X51R Instrument Panel Wiring Harness Junction Block - Right |
| (2) E8VC Front Floor Courtesy Lamp - Right |

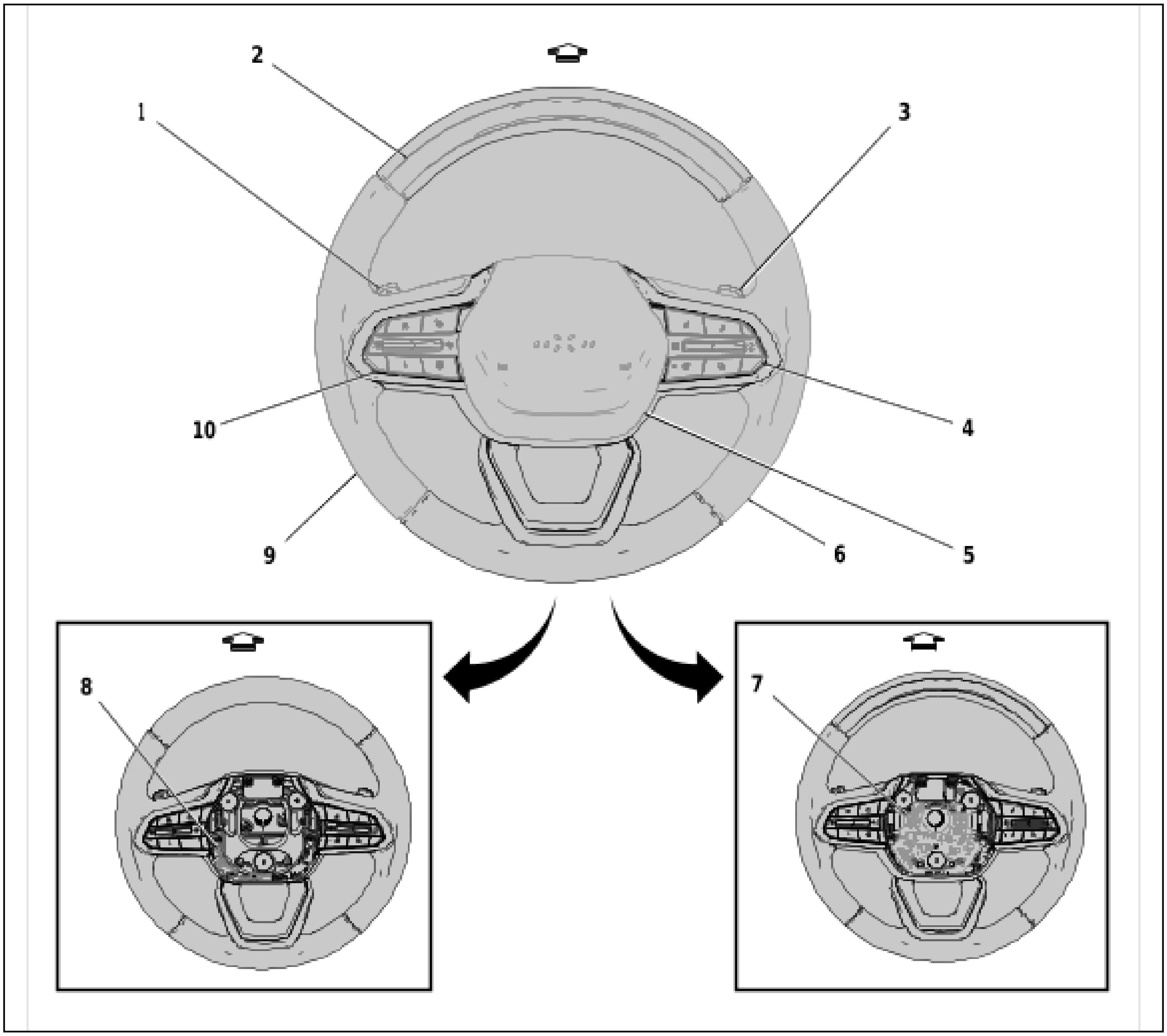
## HVAC Components



6676698

| Items |
|---|
| (1) M4P Programmable Air Inlet Valve Actuator |
| (2) M37P Programmable Mode Valve Actuator |
| (3) B39 Air Conditioning Evaporator Air Temperature Sensor |
| (4) E40 Air Heater (C3A) |
| (5) M6PL Programmable Temperature Valve Actuator - Left |
| (6) M8 Blower Motor |
| (7) M6PR Programmable Temperature Valve Actuator - Right |

### Steering Wheel Components



6678284

**Items**

(1) S70E Radio Favorites Switch - Steering Wheel

(2) P51 Steering Wheel LED Display (UKL)

(3) S70F Radio Volume Switch - Steering Wheel

(4) S70R Radio Control Switch - Steering Wheel

(5) F107 Steering Wheel Airbag

(6) B307 Steering Wheel Touch Sensor (UKL)

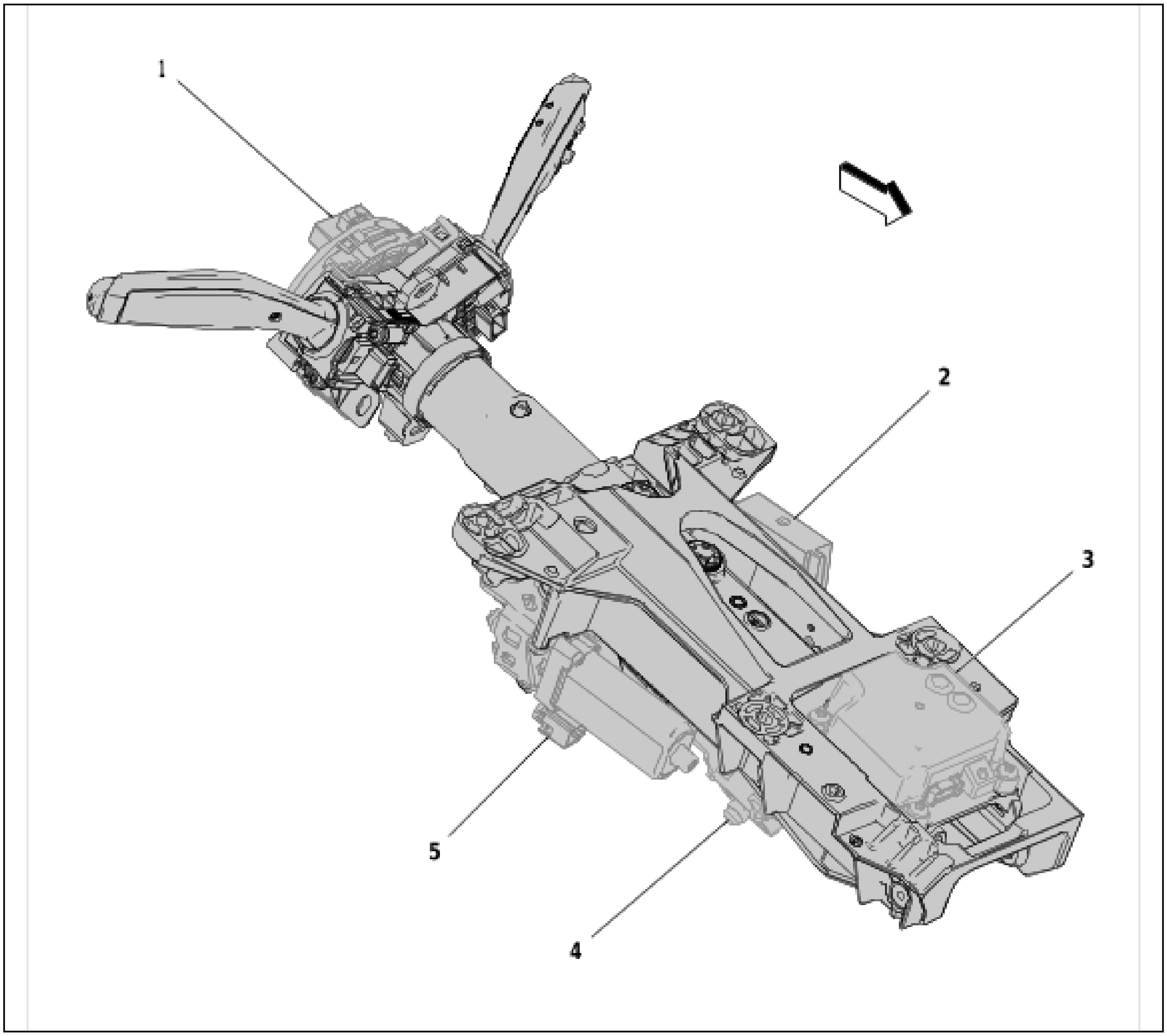
(7) K180S Driver Monitoring System Module - Steering Wheel (UKL)

(8) K32 Heated Steering Wheel Module (KI3 - UKL)

(9) E15 Steering Wheel Heater (KI3)

(10) S70L Cruise Control Switch

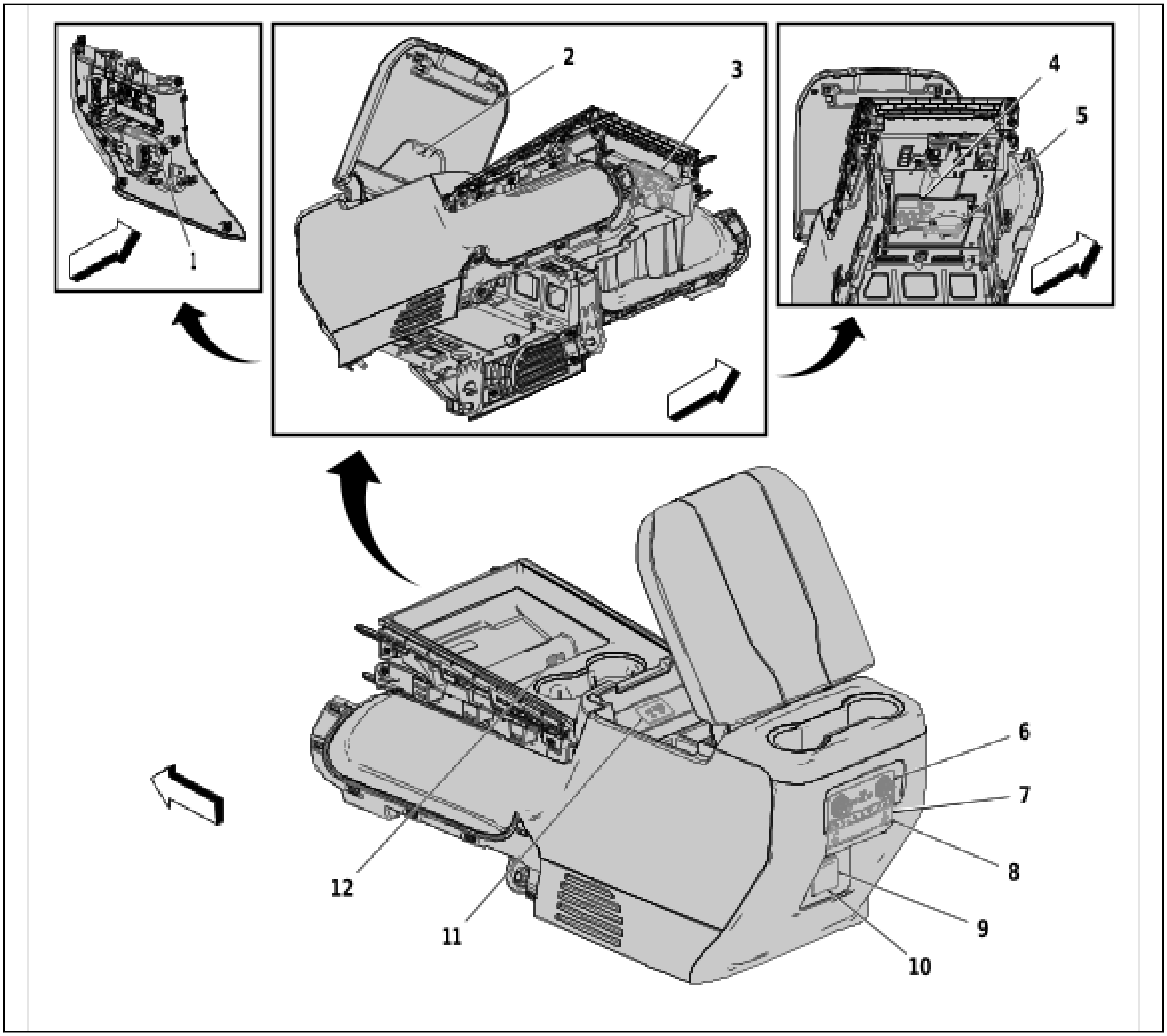
## Steering Column Components



6678285

| Items |
|---|
| (1) X85 Steering Wheel Airbag Coil |
| (2) K99 Steering Column Control Module (N38) |
| (3) K60 Column Lock Module |
| (4) M65 Steering Column Telescope Actuator (N38) |
| (5) M68 Steering Column Tilt Wheel Actuator (N38) |

## Floor Console Components (D07)

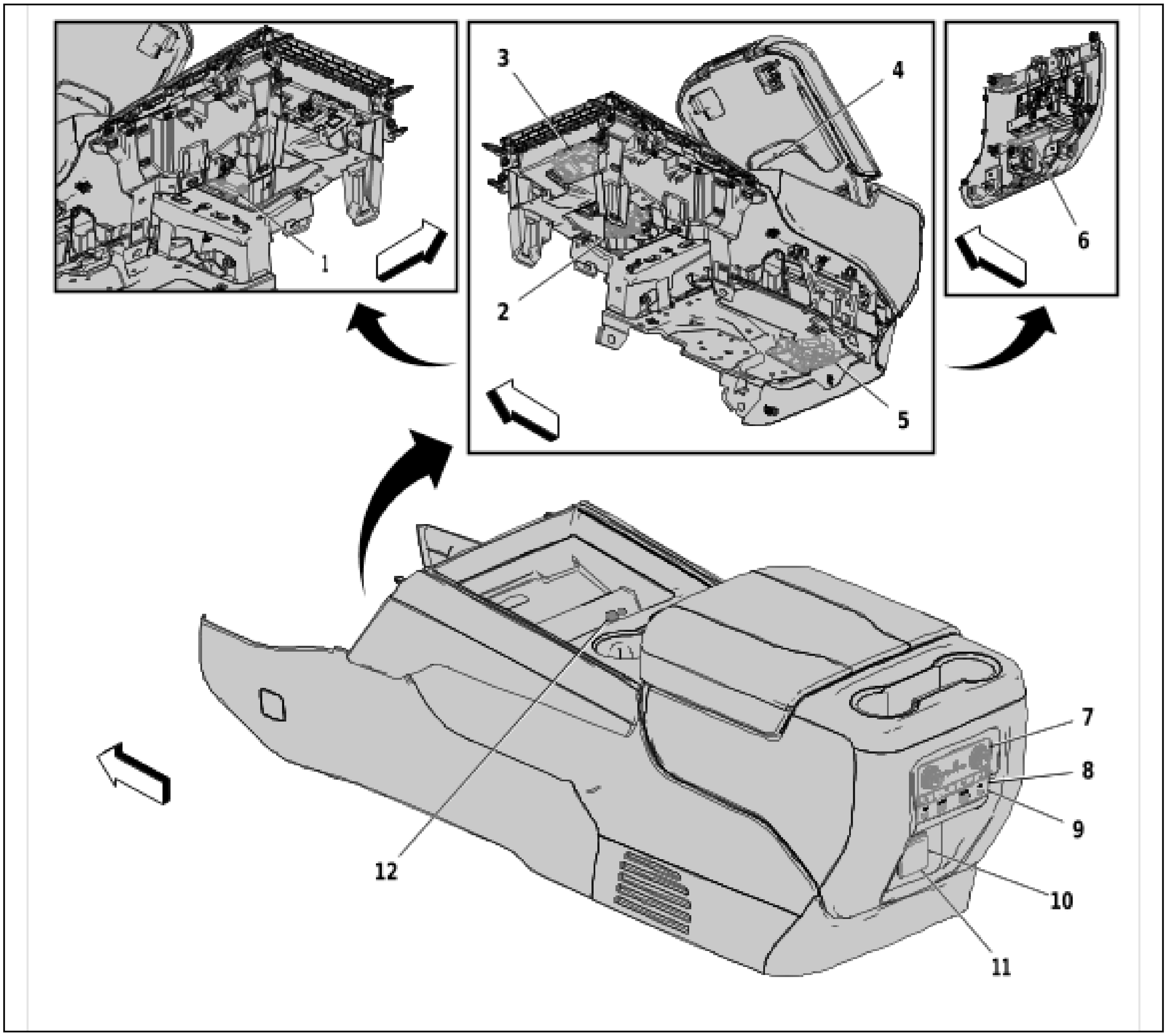


6686791

| Items |
|---|
| (1) T10KA Low Frequency Console Number 2 Antenna (DCH / DCK / (D07 - (5W4 / 9C1))) |
| (2) E28 Front Floor Console Compartment Lamp (D07 / DCH) |
| (3) T22 Wireless Accessory Charging Module (K7A) |
| (4) K183 UHF Short Range Low Energy Remote Control Access Transceiver (BOR / BOY) |
| (5) T10U Low Frequency Console Antenna - Front |
| (6) A34 Heater and Air Conditioning Auxiliary Control |
| (7) X83B Audio/Video Receptacle (UW9) |
| (8) X92CD Dual Charge Only Receptacle - Floor Console Rear |
| (9) X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4) |

| Items |
|---|
| (10) X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5) |
| (11) X23 Multimedia Receptacle (- DCH) |
| (12) X92CF USB 2 Port Receptacle - Floor Console Front |

### Floor Console Components (DCH)

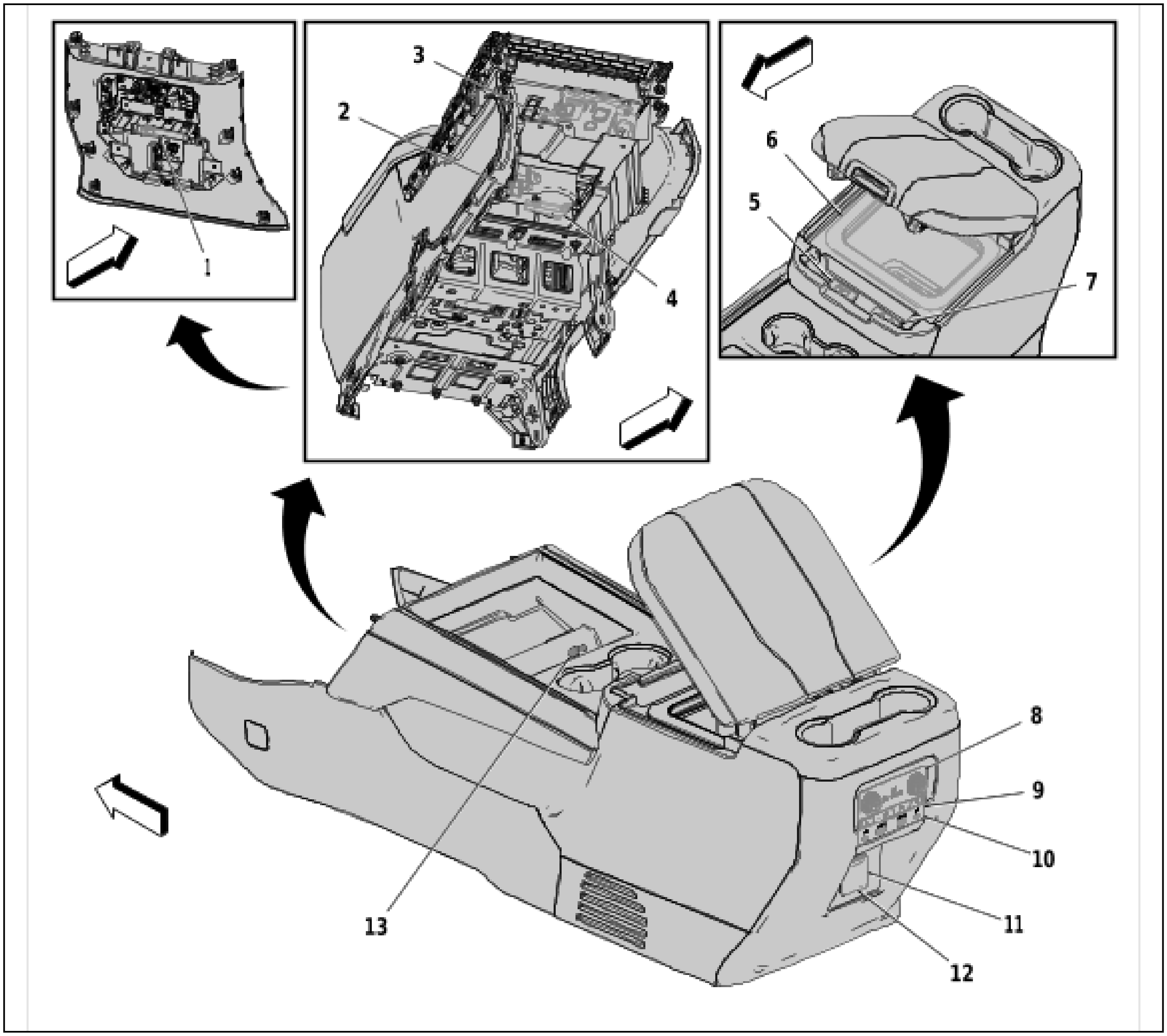


6686792

| Items |
|---|
| (1) T10U Low Frequency Console Antenna - Front |
| (2) K183 UHF Short Range Low Energy Remote Control Access Transceiver (BOR / BOY) |
| (3) T22 Wireless Accessory Charging Module (K7A) |
| (4) E28 Front Floor Console Compartment Lamp (D07 / DCH) |
| (5) K230 Front Floor Console Control Module (DCH) |

| Items |
|---|
| (6) T10KA Low Frequency Console Number 2 Antenna (DCH / DCK / (D07 - (5W4 / 9C1))) |
| (7) A34 Heater and Air Conditioning Auxiliary Control |
| (8) X83B Audio/Video Receptacle (UW9) |
| (9) X92CD Dual Charge Only Receptacle - Floor Console Rear |
| (10) X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4) |
| (11) X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5) |
| (12) X92CF USB 2 Port Receptacle - Floor Console Front |

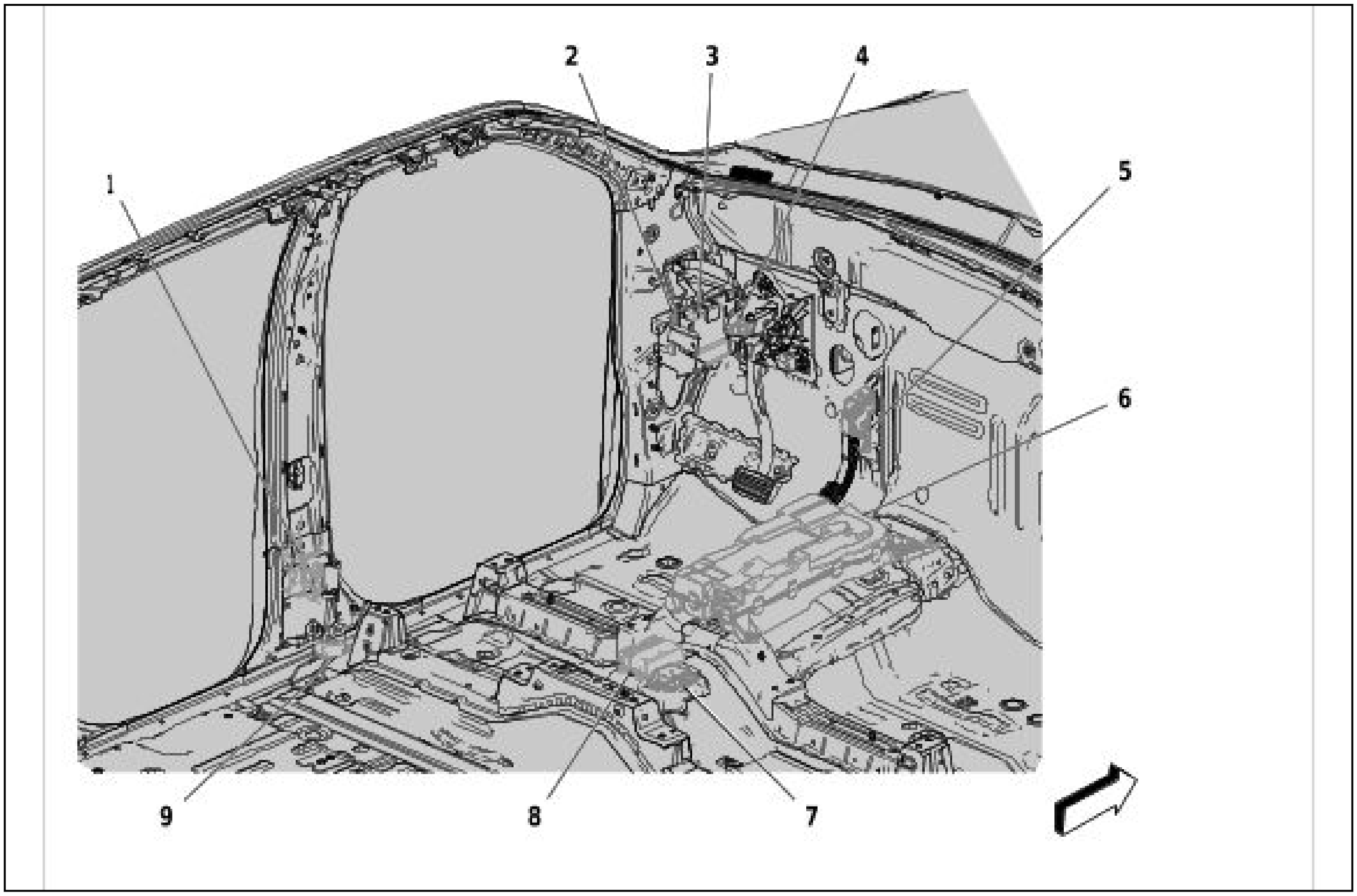
## Floor Console Components (DCK)



6686797

| Items |
|---|
| (1) T10KA Low Frequency Console Number 2 Antenna (DCH / DCK / (D07 - (5W4 / 9C1))) |
| (2) K183 UHF Short Range Low Energy Remote Control Access Transceiver (BOR / BOY) |
| (3) T22 Wireless Accessory Charging Module (K7A) |
| (4) T10U Low Frequency Console Antenna - Front |
| (5) S145 Beverage Cooler Switch (DCK) |
| (6) K175 Front Floor Console Compartment Cooler (DCK) |
| (7) X23 Multimedia Receptacle (- DCH) |
| (8) A34 Heater and Air Conditioning Auxiliary Control |
| (9) X83B Audio/Video Receptacle (UW9) |
| (10) X92CD Dual Charge Only Receptacle - Floor Console Rear |
| (11) X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4) |
| (12) X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5) |
| (13) X92CF USB 2 Port Receptacle - Floor Console Front |

### Passenger Compartment Components - Left

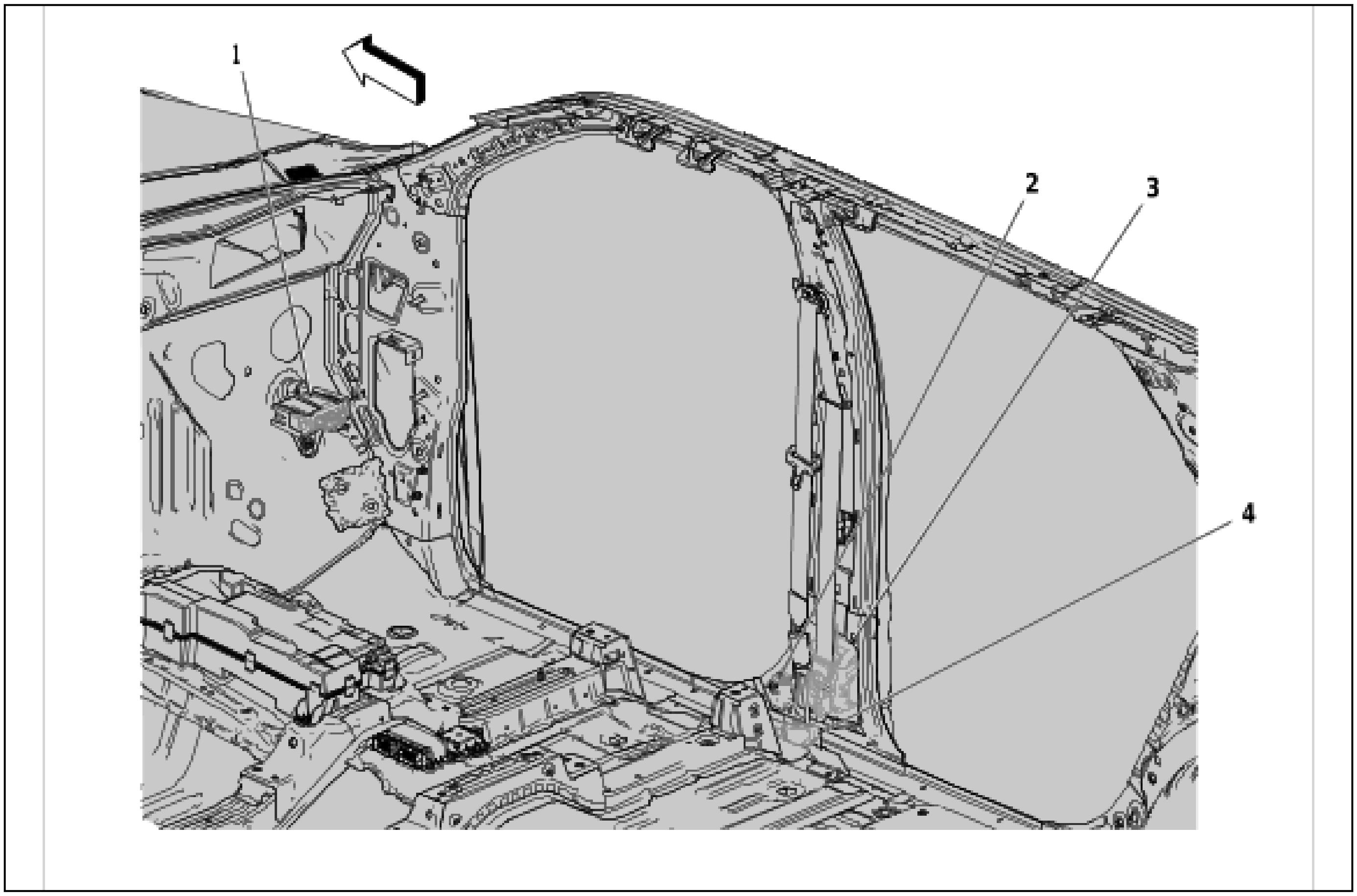


6682037

| Items |
|---|
| (1) F112D Front Seat Belt Retractor - Driver |
| (2) K9 Body Control Module |

| Items |
|---|
| (3) K219 Lighting Control Module |
| (4) B22 Brake Pedal Position Sensor |
| (5) B107 Accelerator Pedal Position Sensor |
| (6) P19AFC Front Floor Speaker - Console (UQS) |
| (7) B284 Vehicle Dynamics Sensor (UKL) |
| (8) K36 Restraints Control Module |
| (9) F113D Front Seat Belt Anchor Plate Tensioner - Driver |

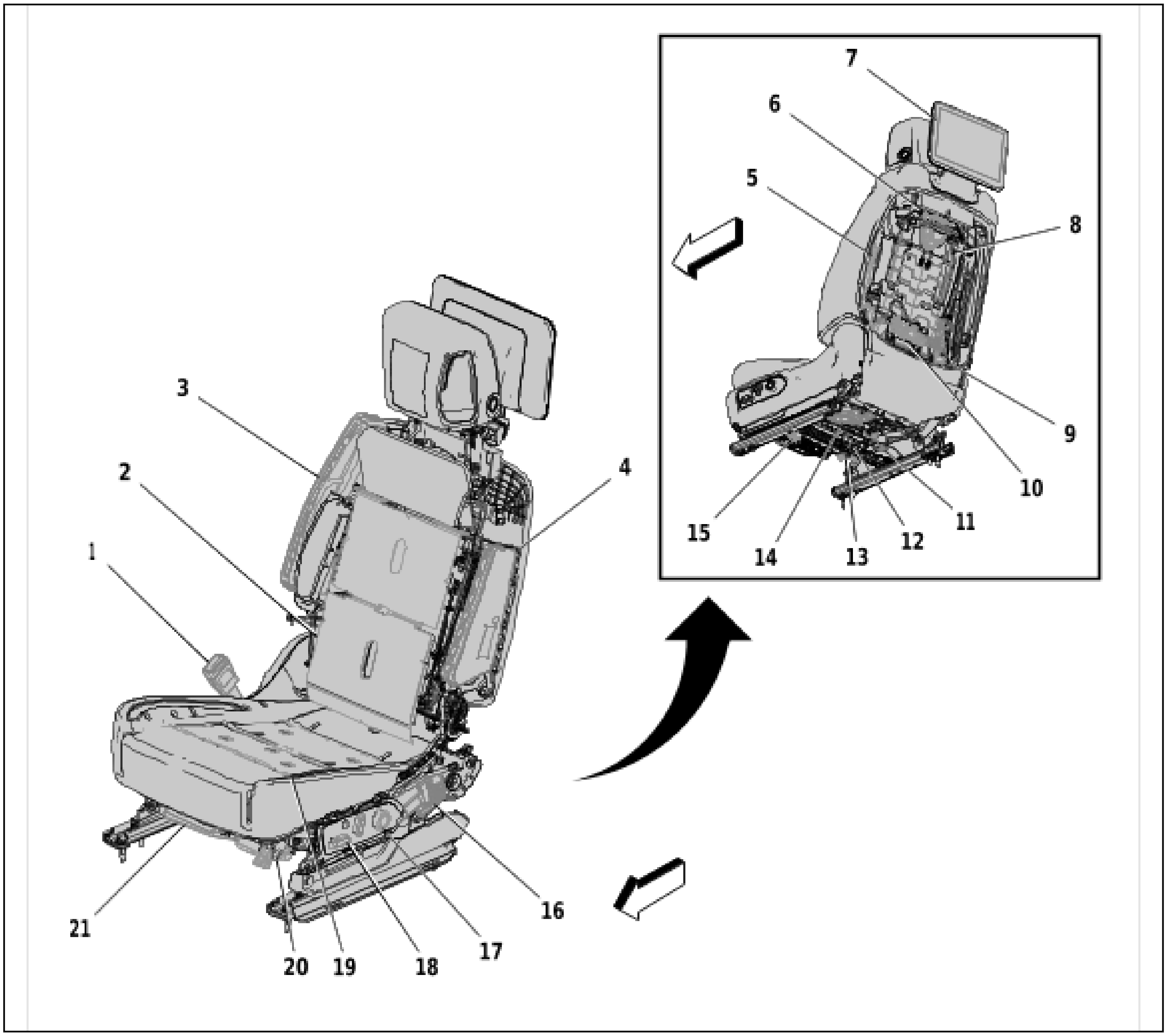
### Passenger Compartment Components - Right



6682038

| Items |
|---|
| (1) T19 Multifunction Power Supply Converter |
| (2) B61P Seat Belt Tension Sensor - Passenger |
| (3) F112P Front Seat Belt Retractor - Passenger |
| (4) F113P Front Seat Belt Anchor Plate Tensioner - Passenger |

## Driver Seat Components

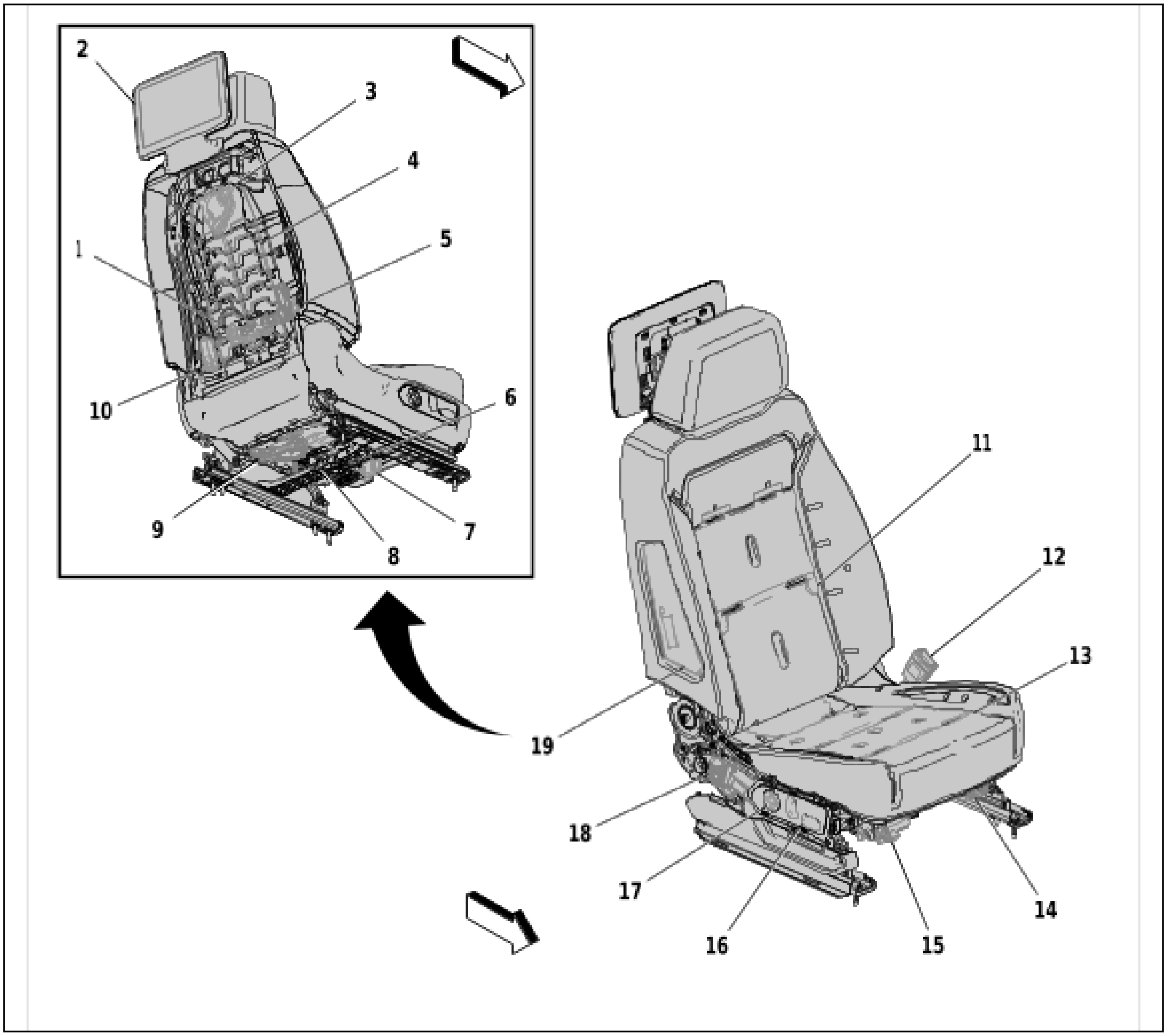


6693377

| Items |
|---|
| (1) B88DB Seat Belt Sensor - Driver |
| (2) E14A Front Seat Back Heater - Driver (KA1) |
| (3) F106DA Front Seat Inboard Seat Back Airbag - Driver (ASD) |
| (4) F106D Front Seat Outboard Seat Back Airbag - Driver |
| (5) M56D Front Seat Recliner Actuator - Driver |
| (6) M73A Front Seat Back Ventilation Blower - Driver (KQV) |
| (7) P22E Video Display - Left Front Seat Back (UW9) |
| (8) M53D Front Seat Back Lumbar Motor - Driver (AL9) |
| (9) G31D Front Seat Back Lumbar Pump - Driver (AVK) |
| (10) K104DP Front Seat Bladder Control Module - Driver Primary (AVK) |
| (11) M51D Front Seat Adjuster Actuator - Driver |

| Items |
|---|
| (12) E8VB Rear Floor Courtesy Lamp - Left |
| (13) P45R Front Seat Lane Departure Warning Actuator - Right (HS1) |
| (14) M73D Front Seat Cushion Ventilation Blower - Driver (KQV) |
| (15) P45L Front Seat Lane Departure Warning Actuator - Left (HS1) |
| (16) M55D Front Seat Vertical Adjuster Actuator - Driver |
| (17) S65D Front Seat Lumbar Switch - Driver |
| (18) S64D Front Seat Adjuster Switch - Driver |
| (19) E14B Front Seat Cushion Heater - Driver (KA1) |
| (20) M50D Front Seat Tilt Adjuster Actuator - Driver |
| (21) K40D Driver Seat Adjuster Memory Module (A45 / AUN) |

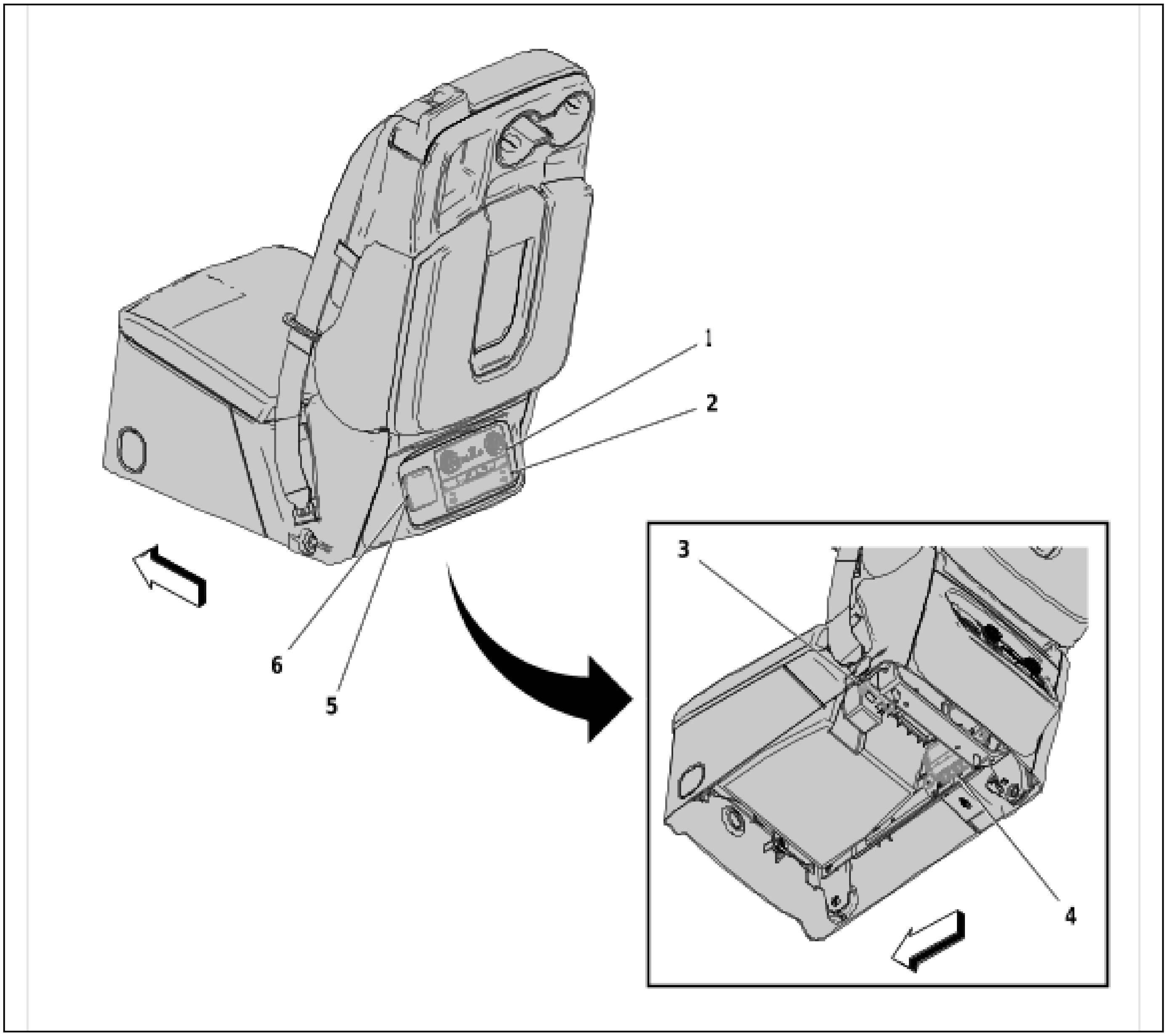
### Passenger Seat Components



6693378

| Items |
|---|
| (1) K104P Front Seat Bladder Control Module - Passenger (AVU) |
| (2) P22F Video Display - Right Front Seat Back (UW9) |
| (3) M73B Front Seat Back Ventilation Blower - Passenger (KQV) |
| (4) M53P Front Seat Back Lumbar Motor - Passenger (AT9) |
| (5) G31P Front Seat Back Lumbar Pump - Passenger (AVU) |
| (6) M51P Front Seat Adjuster Actuator - Passenger |
| (7) K85P Restraints Occupant Classification System Module - Passenger |
| (8) E8VD Rear Floor Courtesy Lamp - Right |
| (9) M73P Front Seat Cushion Ventilation Blower - Passenger (KQV) |
| (10) M56P Front Seat Recliner Actuator - Passenger |
| (11) E14C Front Seat Back Heater - Passenger (KA1) |
| (12) B88P Seat Belt Switch - Passenger |
| (13) E14D Front Seat Cushion Heater - Passenger (KA1) |
| (14) K29FV Front Seat Heater Vent Control Module (KA1) |
| (15) M50P Front Seat Tilt Adjuster Actuator - Passenger (A7K) |
| (16) S64P Front Seat Adjuster Switch - Passenger |
| (17) S65P Front Seat Lumbar Switch - Passenger |
| (18) M55P Front Seat Vertical Adjuster Actuator - Passenger |
| (19) F106P Front Seat Outboard Seat Back Airbag - Passenger |

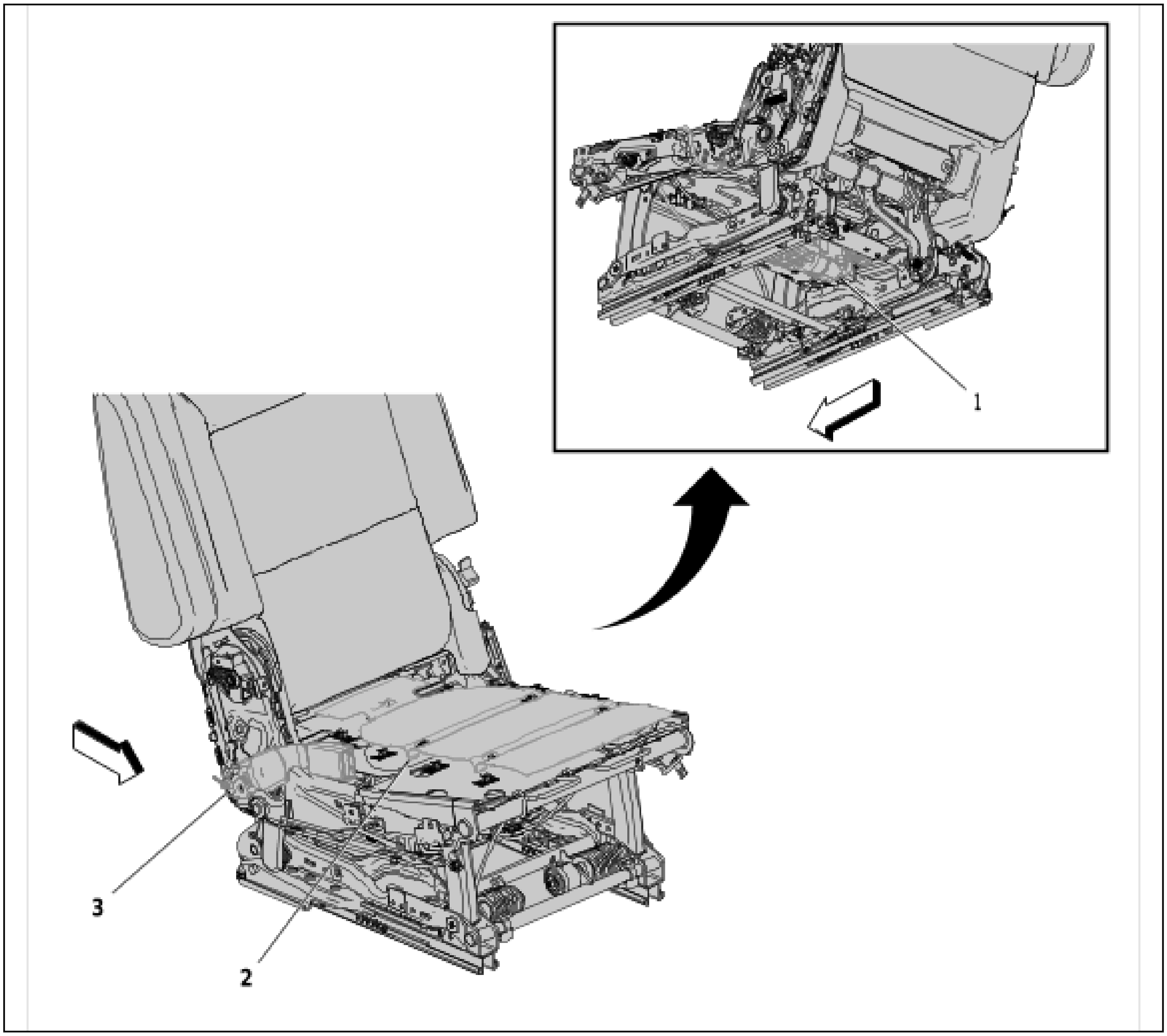
## Front Center Seat Components (AZ3)



6693379

| Items |
|---|
| (1) A34 Heater and Air Conditioning Auxiliary Control |
| (2) X92CD Dual Charge Only Receptacle - Floor Console Rear |
| (3) T10U Low Frequency Console Antenna - Front |
| (4) K183 UHF Short Range Low Energy Remote Control Access Transceiver (BOR / BOY) |
| (5) X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC (KI5) |
| (6) X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC (KI4) |

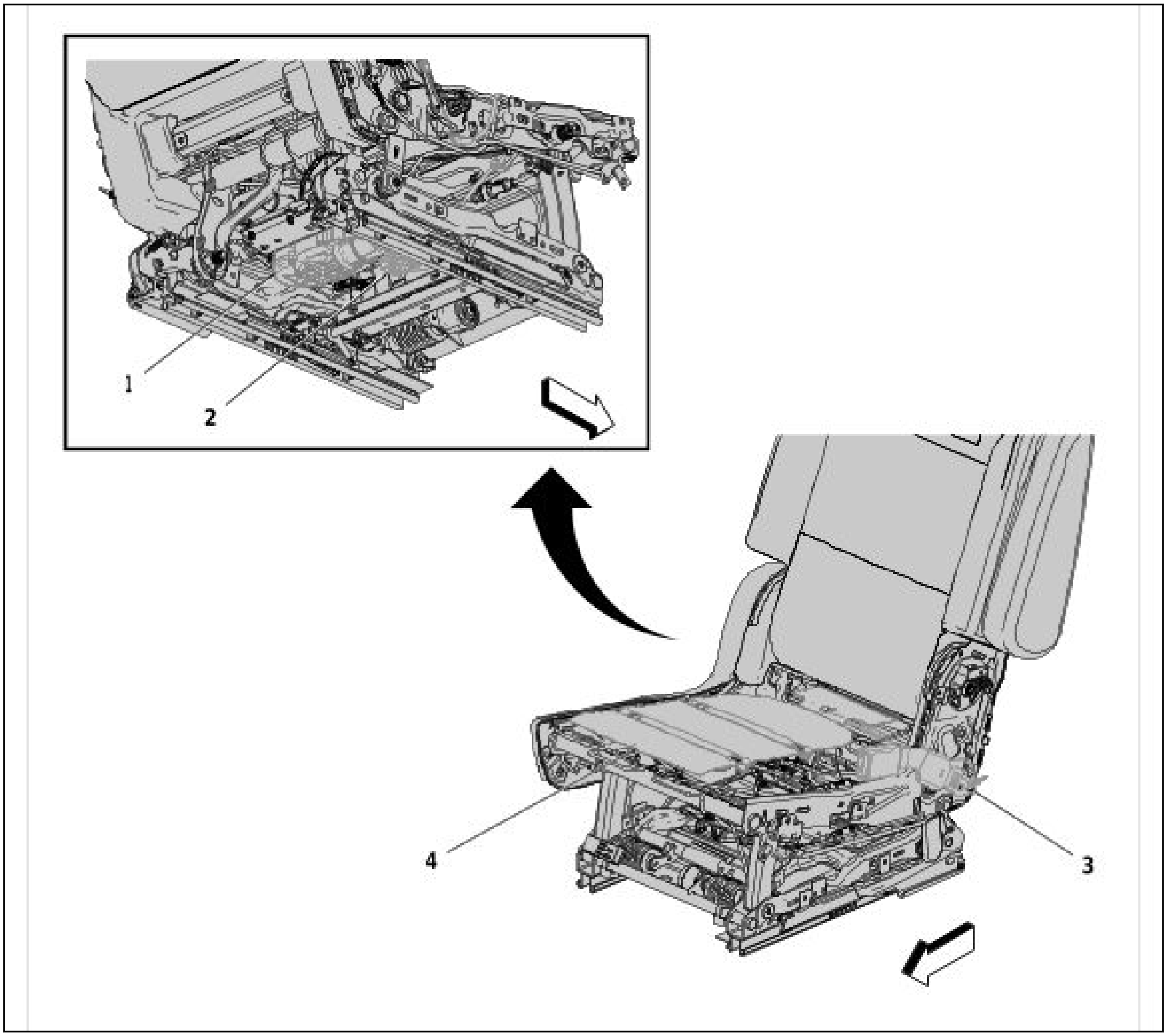
## 2nd Row Seat Components - Left (ATN)



6690079

| Items |
|---|
| (1) M107LR Folding Rear Seat Back Actuator - Left (ATN / ATT) |
| (2) E14F Rear Seat Cushion Heater - Left Rear (KA6) |
| (3) B88LR Seat Belt Switch - Left Rear (UH5) |

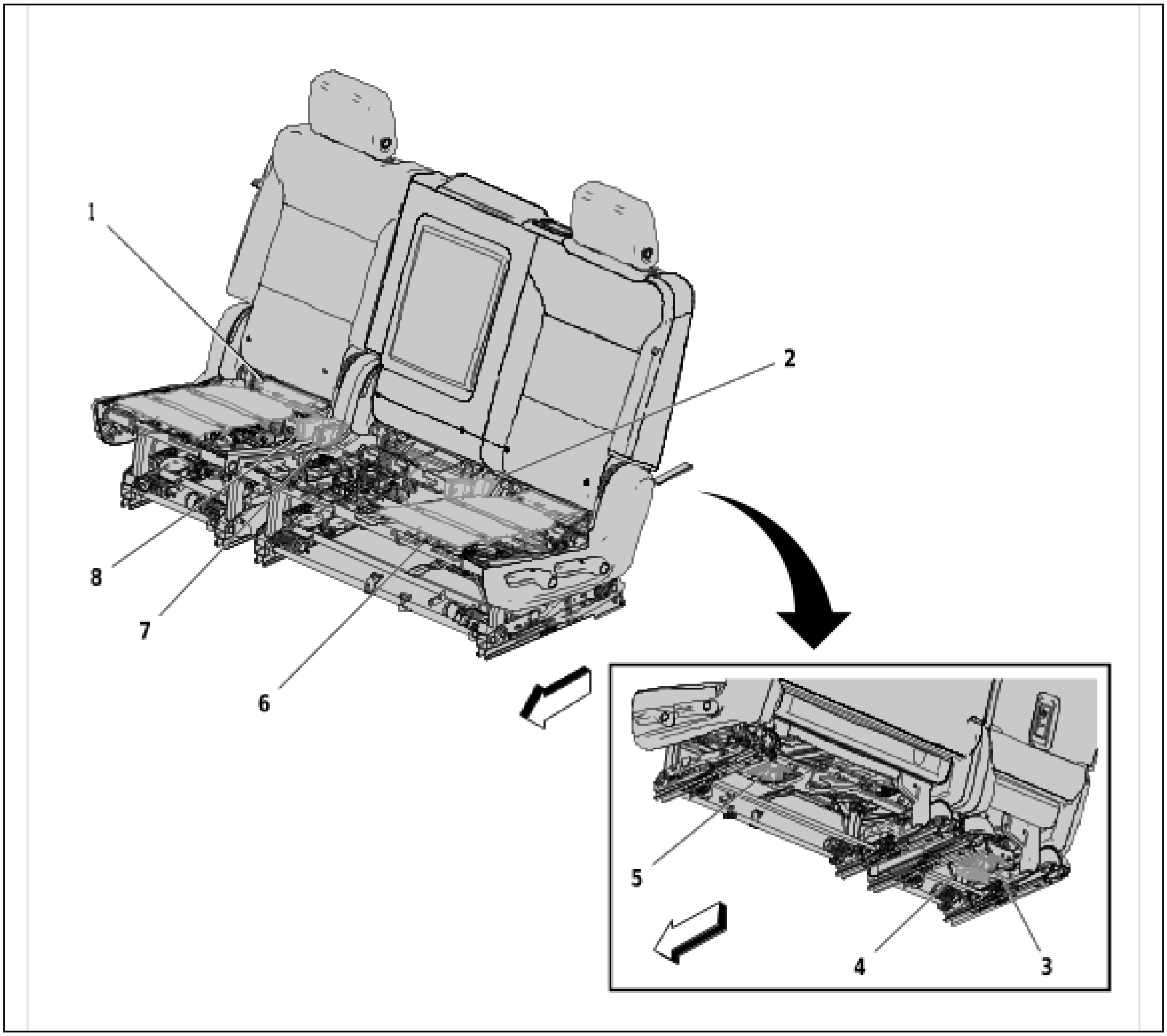
## 2nd Row Seat Components - Right (ATN)



6690080

| Items |
|---|
| (1) M107RR Folding Rear Seat Back Actuator - Right (ATN / ATT) |
| (2) K29R Rear Seat Heater Control Module (KA6) |
| (3) B88RR Seat Belt Switch - Right Rear (UH5) |
| (4) E14H Rear Seat Cushion Heater - Right Rear (KA6) |

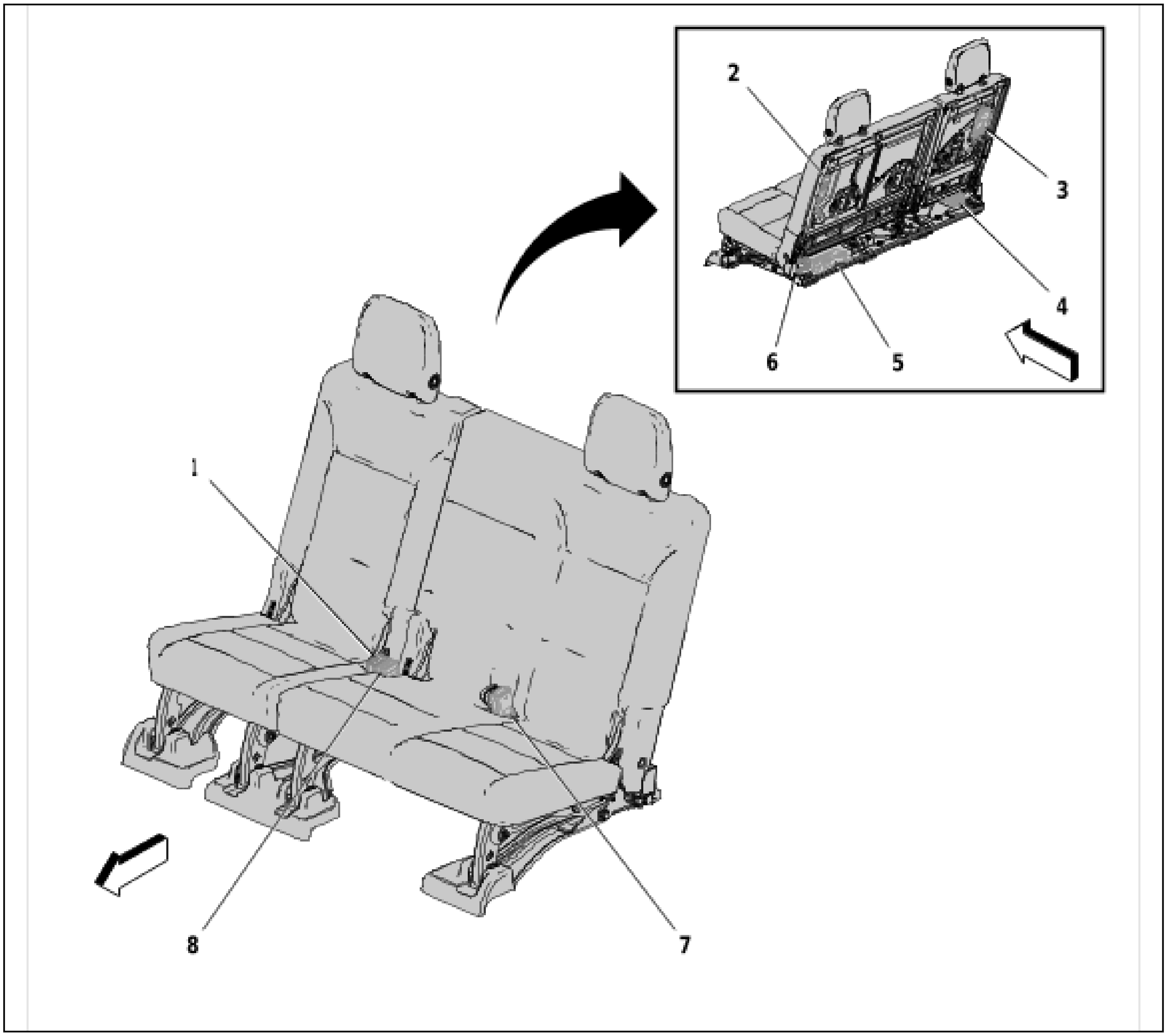
## 2nd Row Seat Components (ATT)



6690081

| Items |
|---|
| (1) E14H Rear Seat Cushion Heater - Right Rear (KA6) |
| (2) B88LR Seat Belt Switch - Left Rear (UH5) |
| (3) M107RR Folding Rear Seat Back Actuator - Right (ATN / ATT) |
| (4) K29R Rear Seat Heater Control Module (KA6) |
| (5) M107LR Folding Rear Seat Back Actuator - Left (ATN / ATT) |
| (6) E14F Rear Seat Cushion Heater - Left Rear (KA6) |
| (7) B88MR Seat Belt Switch - Rear Middle (AT6 / ATT) |
| (8) B88RR Seat Belt Switch - Right Rear (UH5) |

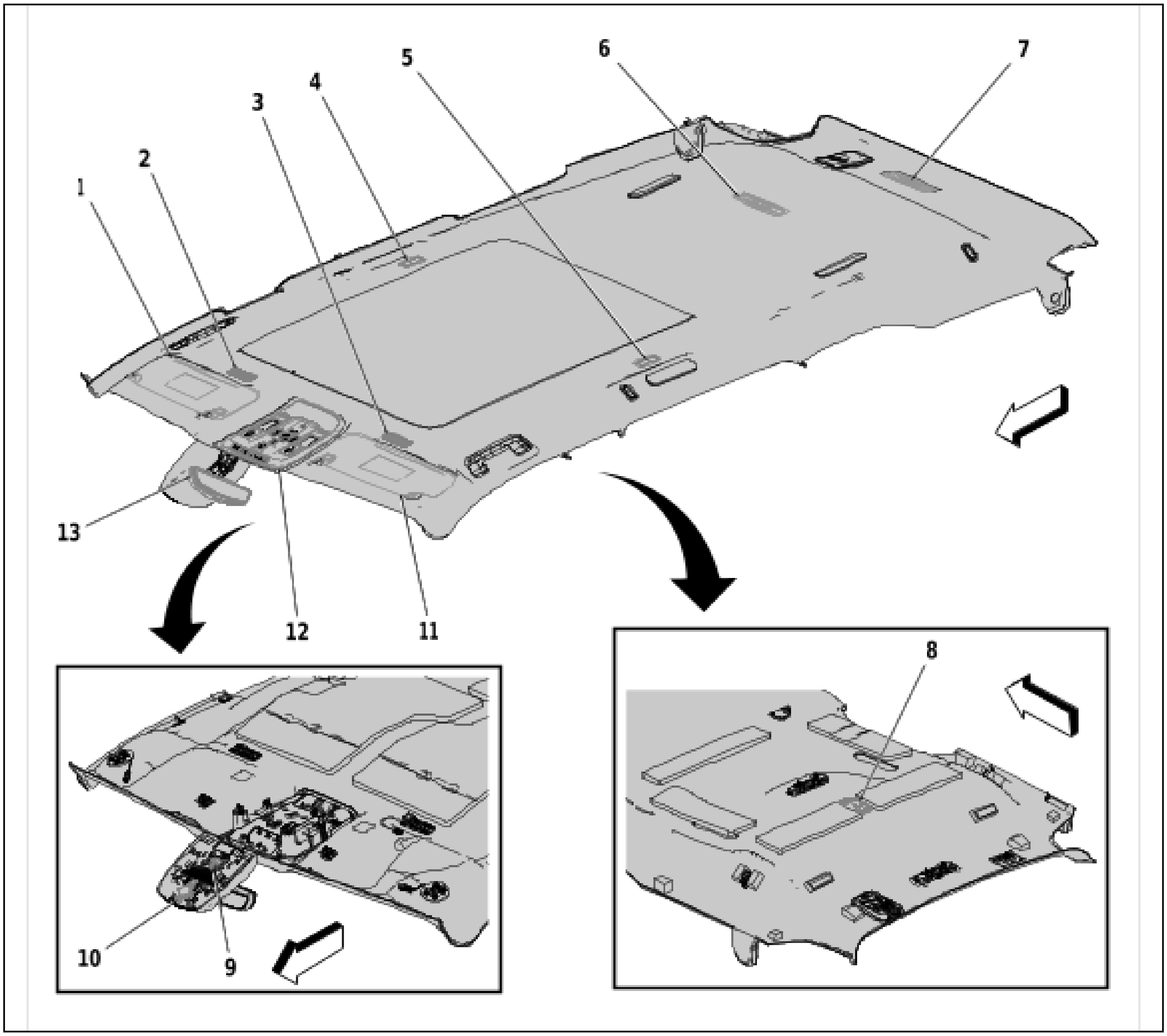
### 3rd Row Seat Components



6691847

| Items |
|---|
| (1) B88CR Seat Belt Switch - 3rd Row Right (UH6) |
| (2) M109LR Folding 3rd Row Seat Back Actuator - Left (AS8) |
| (3) M109RR Folding 3rd Row Seat Back Actuator - Right (AS8) |
| (4) M108RR 3rd Row Seat Back Pivot Actuator Motor - Right (AS8) |
| (5) K169 Folding 3rd Row Seat Module (AS8) |
| (6) M108LR 3rd Row Seat Back Pivot Actuator Motor - Left (AS8) |
| (7) B88CL Seat Belt Switch - 3rd Row Left (UH6) |
| (8) B88CM Seat Belt Switch - 3rd Row Middle (UH6) |

## Roof Components - Headliner (C3U)

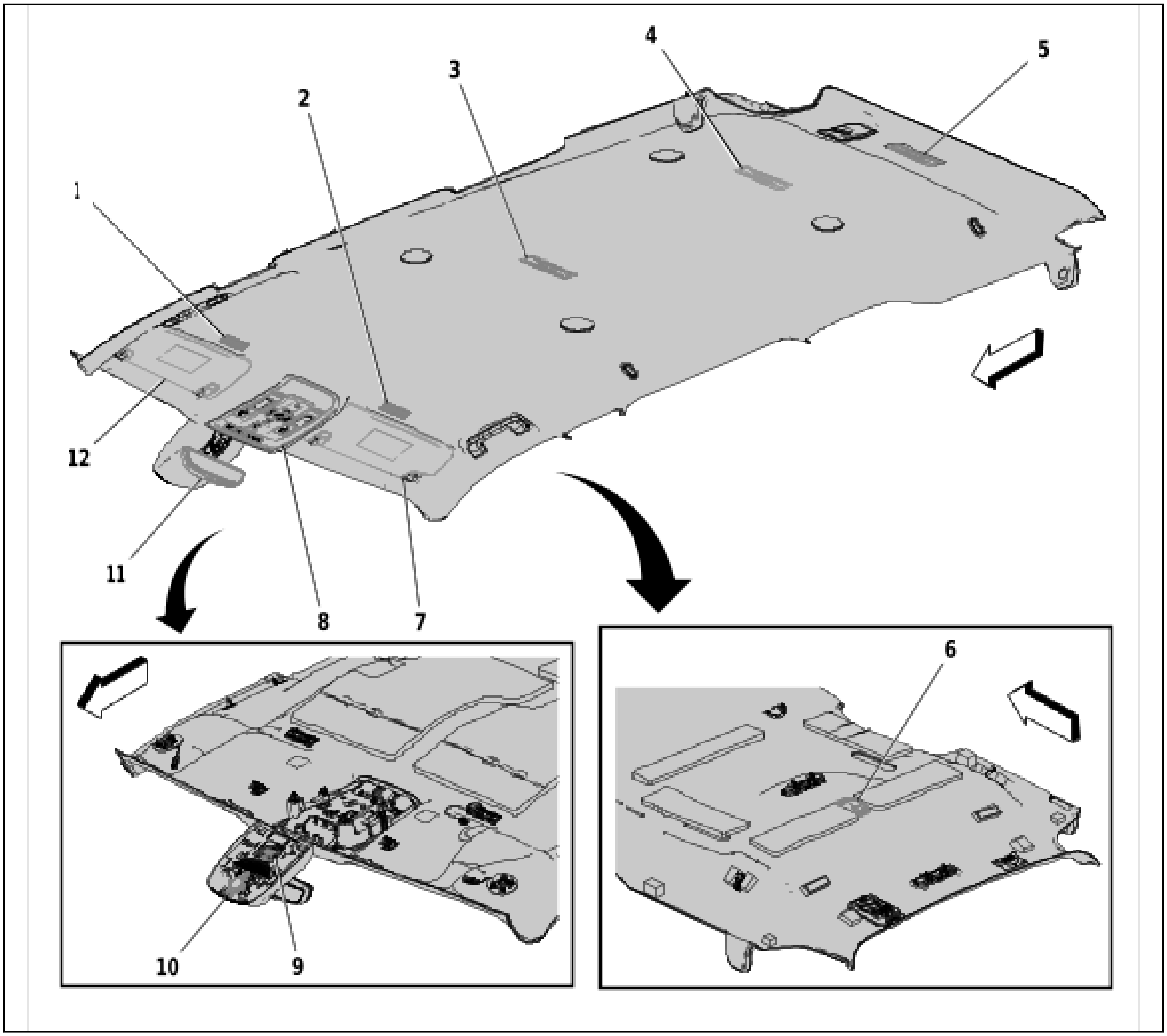


6676699

| Items |
|---|
| (1) A3L Sunshade - Left |
| (2) B355HLF Communication Interface Module Headliner Microphone - Left Front |
| (3) B355HRF Communication Interface Module Headliner Microphone - Right Front |
| (4) E37H Roof Rail Rear Seat Position Reading and Courtesy Lamp - Left (C3U) |
| (5) E37J Roof Rail Rear Seat Position Reading and Courtesy Lamp - Right (C3U) |
| (6) E37SMB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row |
| (7) E8SR Cargo Center Courtesy Lamp |
| (8) B342E UHF Low Energy Remote Control Access Sensor Transceiver 5 (BOR / BOY) |
| (9) B174W Front View Camera - Windshield (UGN / UHY) |

| Items |
|---|
| (10) B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor |
| (11) A3R Sunshade - Right |
| (12) A103 Roof Console |
| (13) A10 Inside Rearview Mirror (DD8 / DRZ) |

### Roof Components - Headliner (- C3U)

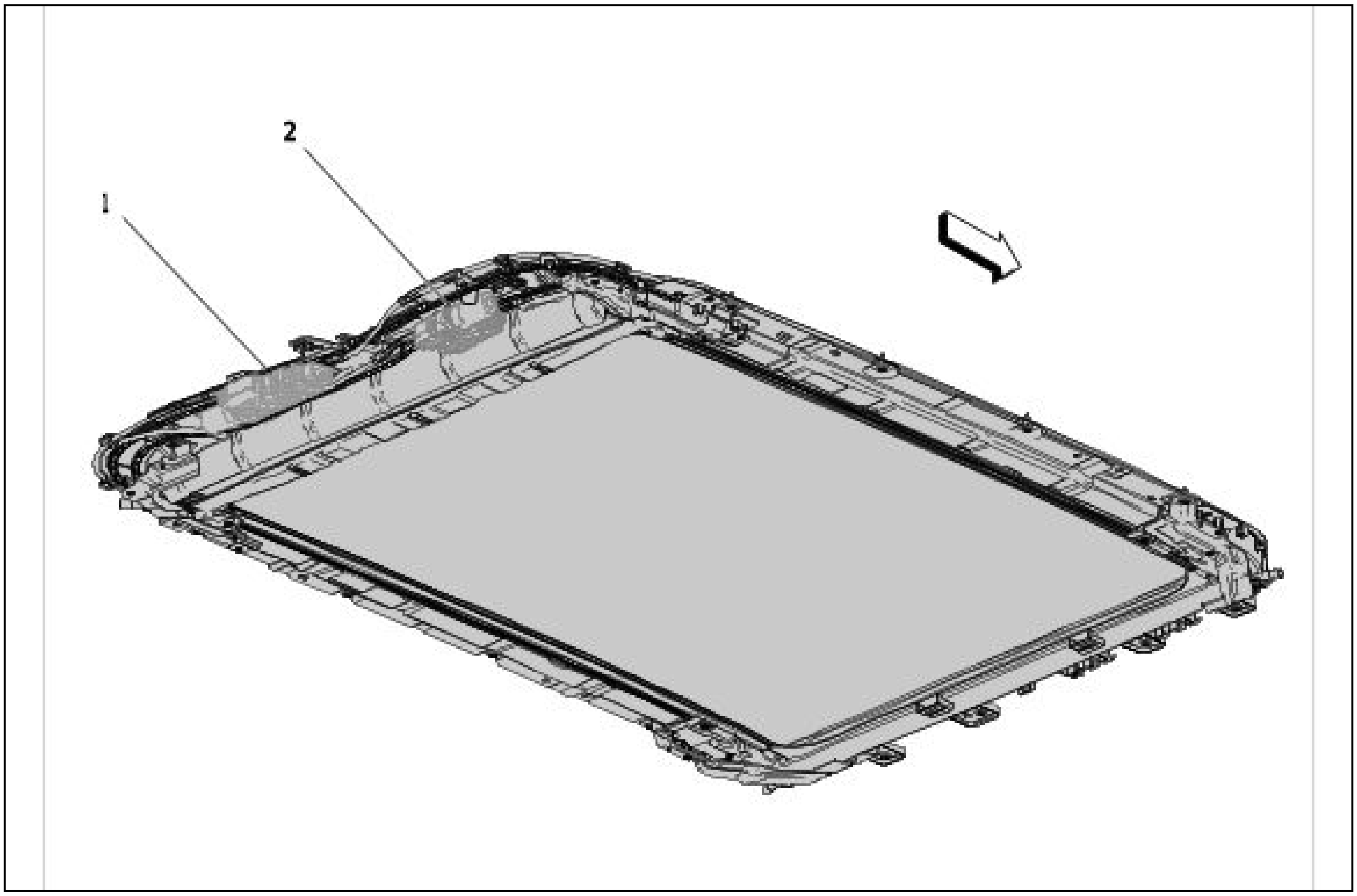


6676700

| Items |
|---|
| (1) B355HLF Communication Interface Module Headliner Microphone - Left Front |
| (2) B355HRF Communication Interface Module Headliner Microphone - Right Front |
| (3) E37SMA Rear Seat Position Center Reading and Courtesy Lamp - 2nd Row (- C3U) |

| Items |
|---|
| (4) E37SMB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row |
| (5) E8SR Cargo Center Courtesy Lamp |
| (6) B342E UHF Low Energy Remote Control Access Sensor Transceiver 5 (BOR / BOY) |
| (7) A3R Sunshade - Right |
| (8) A103 Roof Console |
| (9) B174W Front View Camera - Windshield (UGN / UHY) |
| (10) B117A Windshield Outside Moisture/Ambient Light and Humidity Sensor |
| (11) A10 Inside Rearview Mirror (DD8 / DRZ) |
| (12) A3L Sunshade - Left |

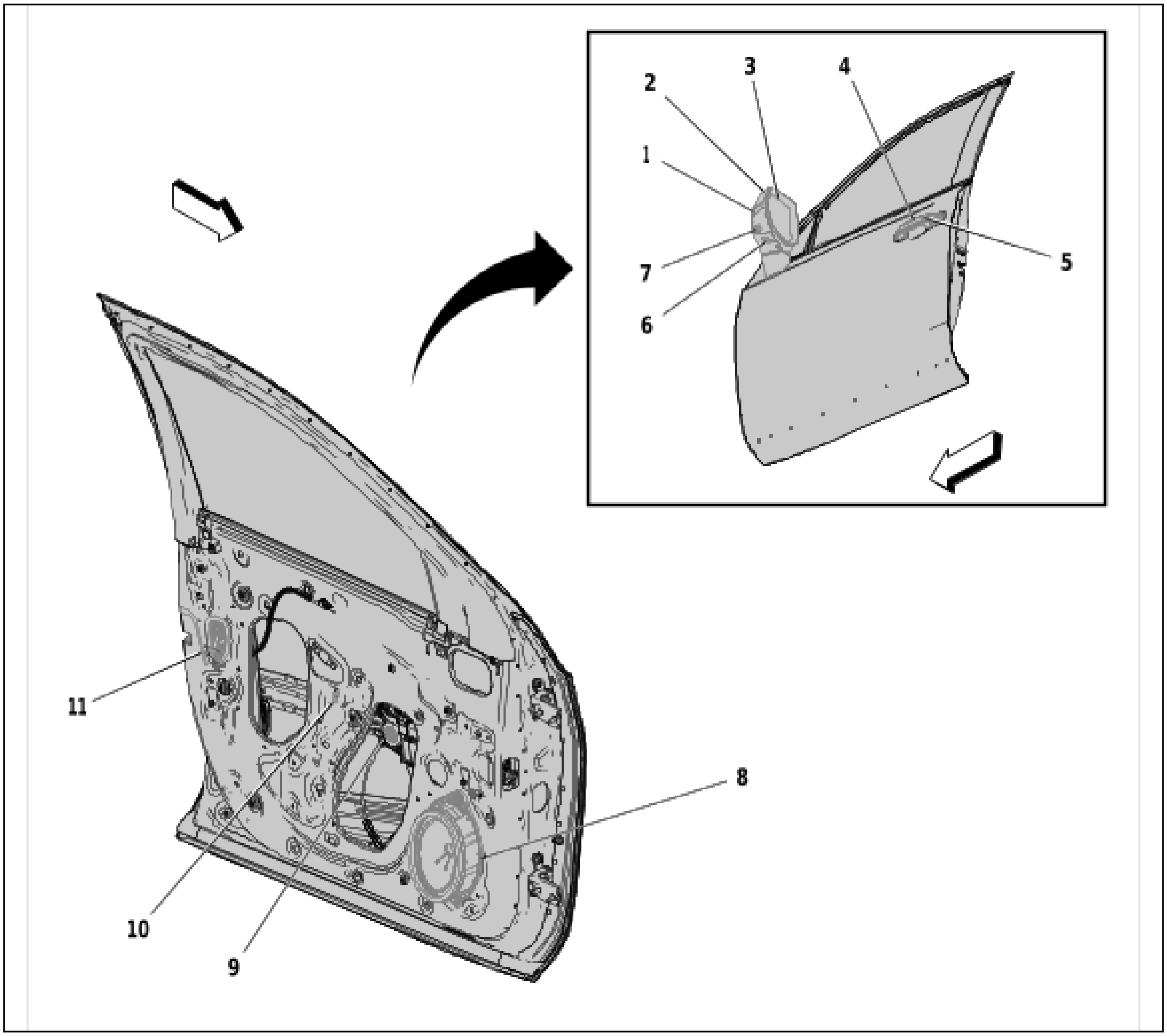
### Sunroof Components (C3U)



6678286

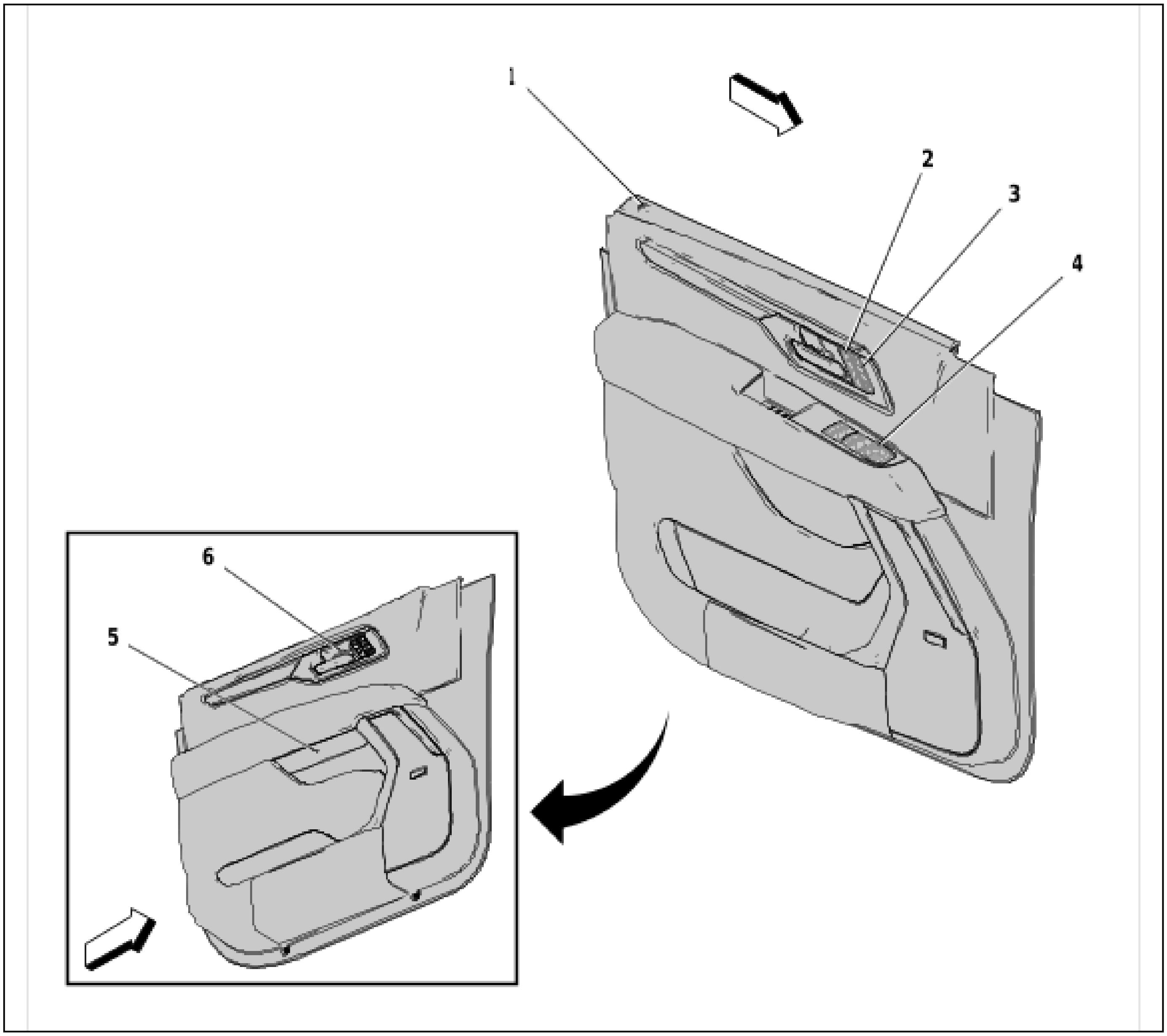
| Items |
|---|
| (1) K61 Sunroof Control Module (C3U) |
| (2) M81 Sunroof Sunshade Motor (C3U) |

## Driver Door Components



| Items |
|---|
| (1) E4Y Outside Rearview Mirror Turn Signal Lamp - Left (DW6 / DXR) |
| (2) A9A Outside Rearview Mirror - Driver |
| (3) E17D Outside Rearview Mirror Glass - Driver |
| (4) A24D Front Side Door Outside Handle - Left |
| (5) B27LF Front Side Door Outside Handle Switch - Left |
| (6) E90D Exterior Flood Lamp - Driver Outside Rearview Mirror (DW6 / DXR) |
| (7) B225L Side View Driver Information Camera - Left |
| (8) P19AG Radio Front Side Door Speaker - Left |
| (9) M74D Front Side Door Window Regulator Motor - Driver |
| (10) B63LF Airbag Side Impact Sensor - Left Front Door |
| (11) A23D Front Side Door Latch - Driver |

## Driver Door Trim Components



6678501

**Items**

(1) P18 Door Lock Status Indicator (UTJ)

(2) S13D Door Lock Switch - Driver (- (A45 / AUN))

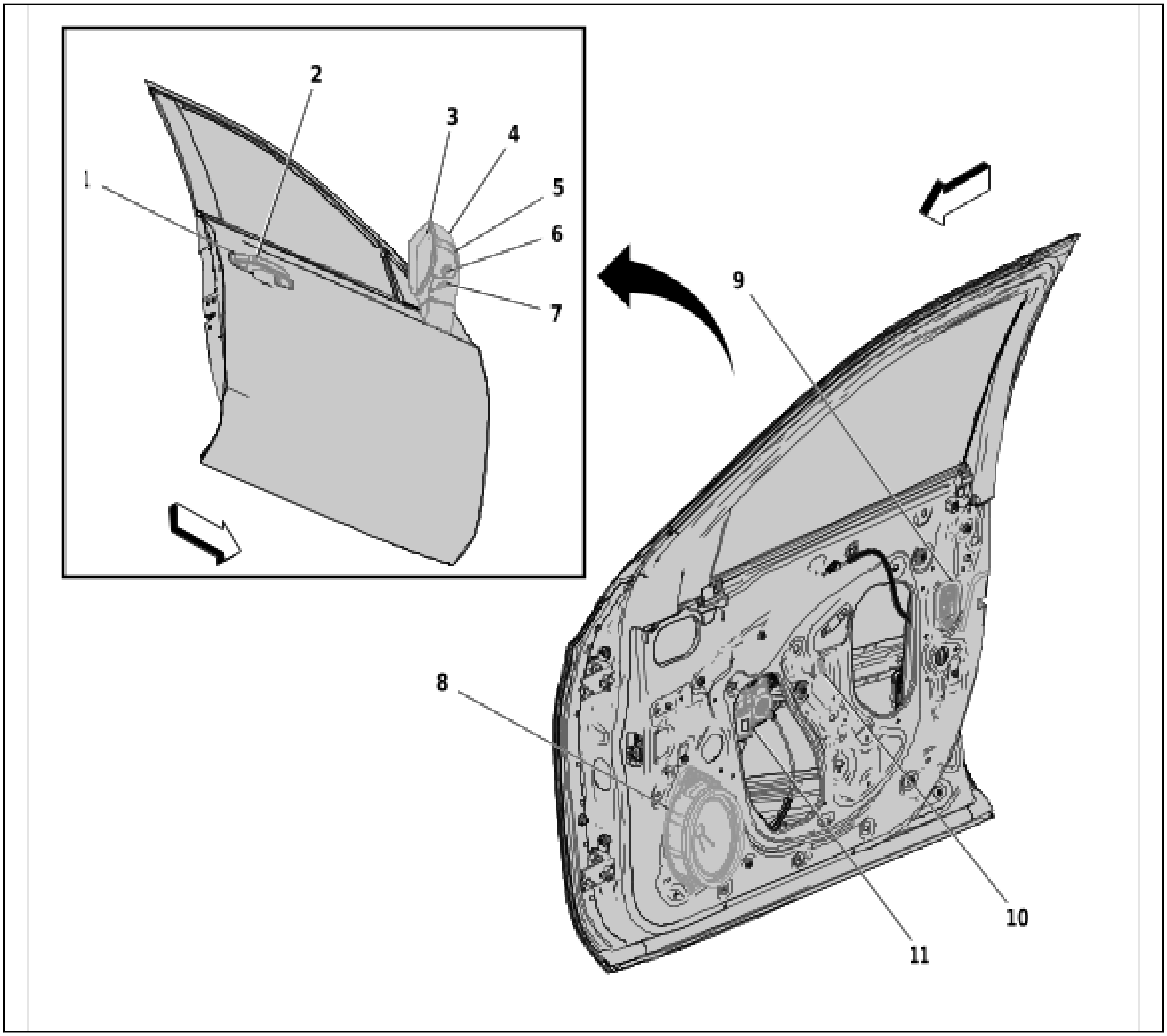
(3) S47D Front Seat Adjuster Memory Switch - Driver (A45 / AUN)

(4) S79D Front Side Door Window Control Switch - Driver

(5) E55LF Front Side Door Map Pocket Illumination Lamp - Left

(6) E63D Front Side Door Inside Handle Illumination Lamp - Left

## Passenger Door Components

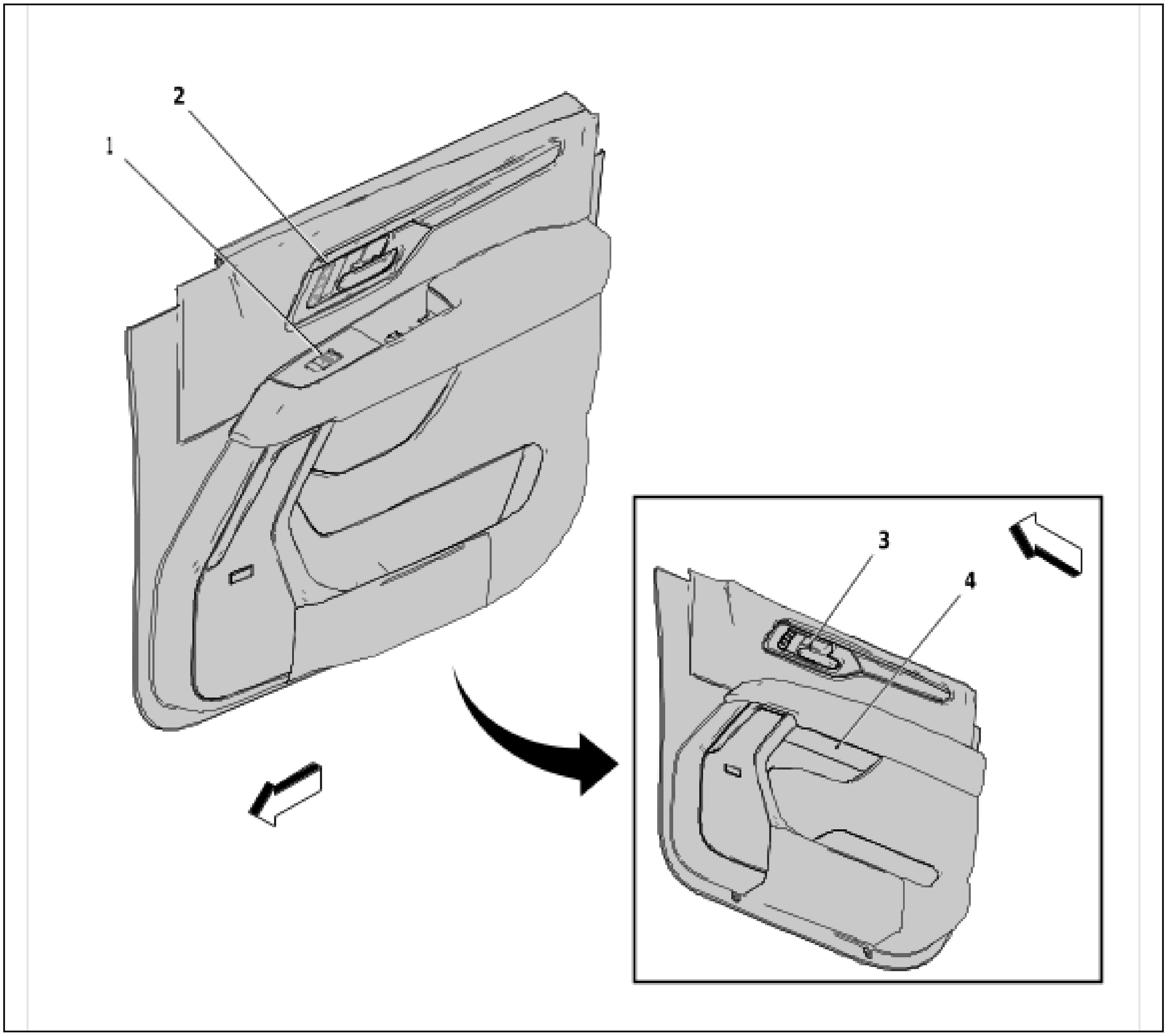


6678502

| Items |
|---|
| (1) A24P Front Side Door Outside Handle - Right |
| (2) B27RF Front Side Door Outside Handle Switch - Right |
| (3) E17P Outside Rearview Mirror Glass - Passenger |
| (4) A9B Outside Rearview Mirror - Passenger |
| (5) E4Z Outside Rearview Mirror Turn Signal Lamp - Right (DW6 / DXR) |
| (6) B225R Side View Driver Information Camera - Right |
| (7) E90P Exterior Flood Lamp - Passenger Outside Rearview Mirror (DW6 / DXR) |
| (8) P19AH Radio Front Side Door Speaker - Right |
| (9) A23P Front Side Door Latch - Passenger |

| Items |
|---|
| (10) B63RF Airbag Side Impact Sensor - Right Front Door |
| (11) M74P Front Side Door Window Regulator Motor - Passenger |

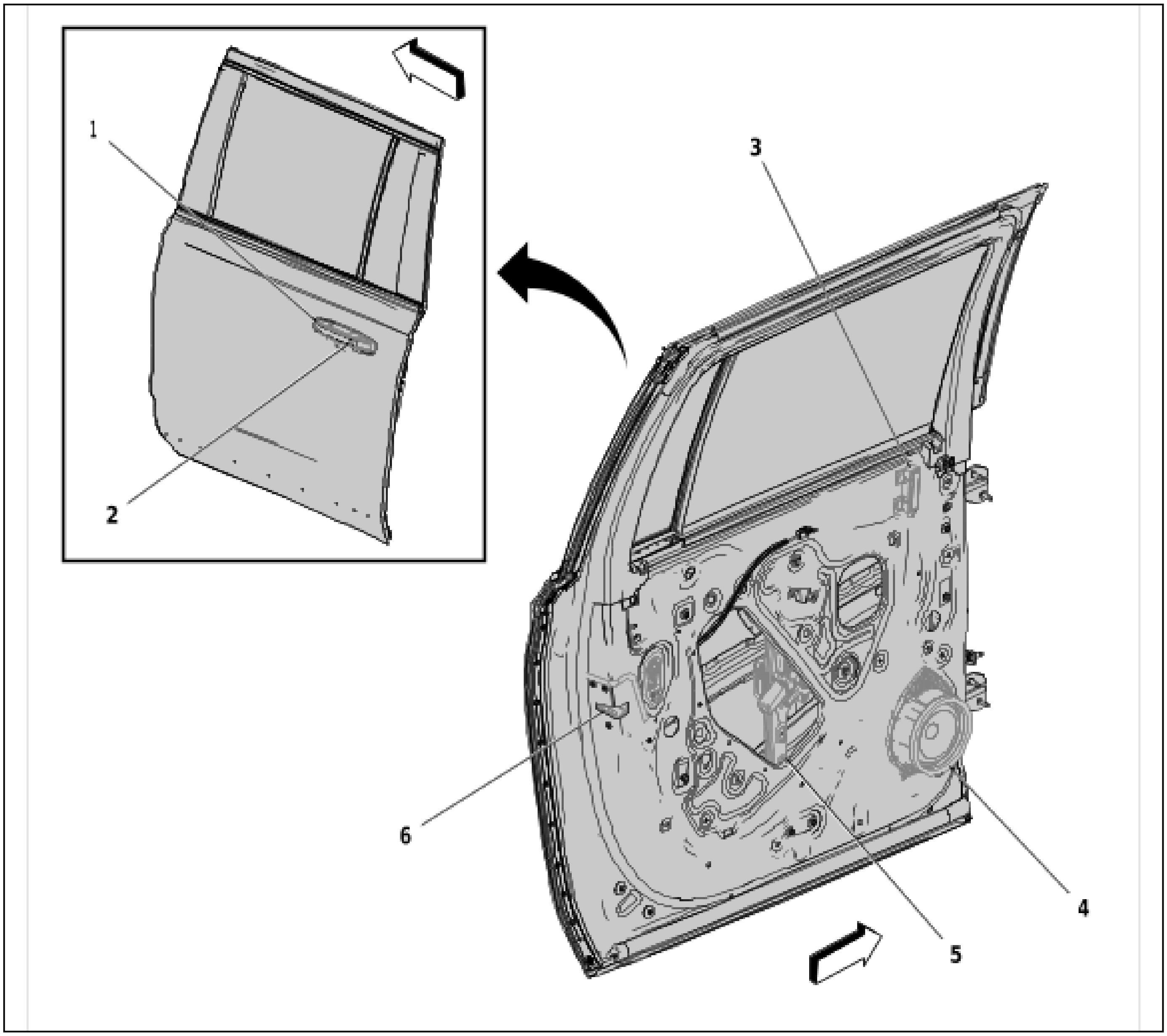
### Passenger Door Trim Components



6678503

| Items |
|---|
| (1) S79P Front Side Door Window Switch - Passenger |
| (2) S13P Door Lock Switch - Passenger |
| (3) E63P Front Side Door Inside Handle Illumination Lamp - Right |
| (4) E55RF Front Side Door Map Pocket Illumination Lamp - Right |

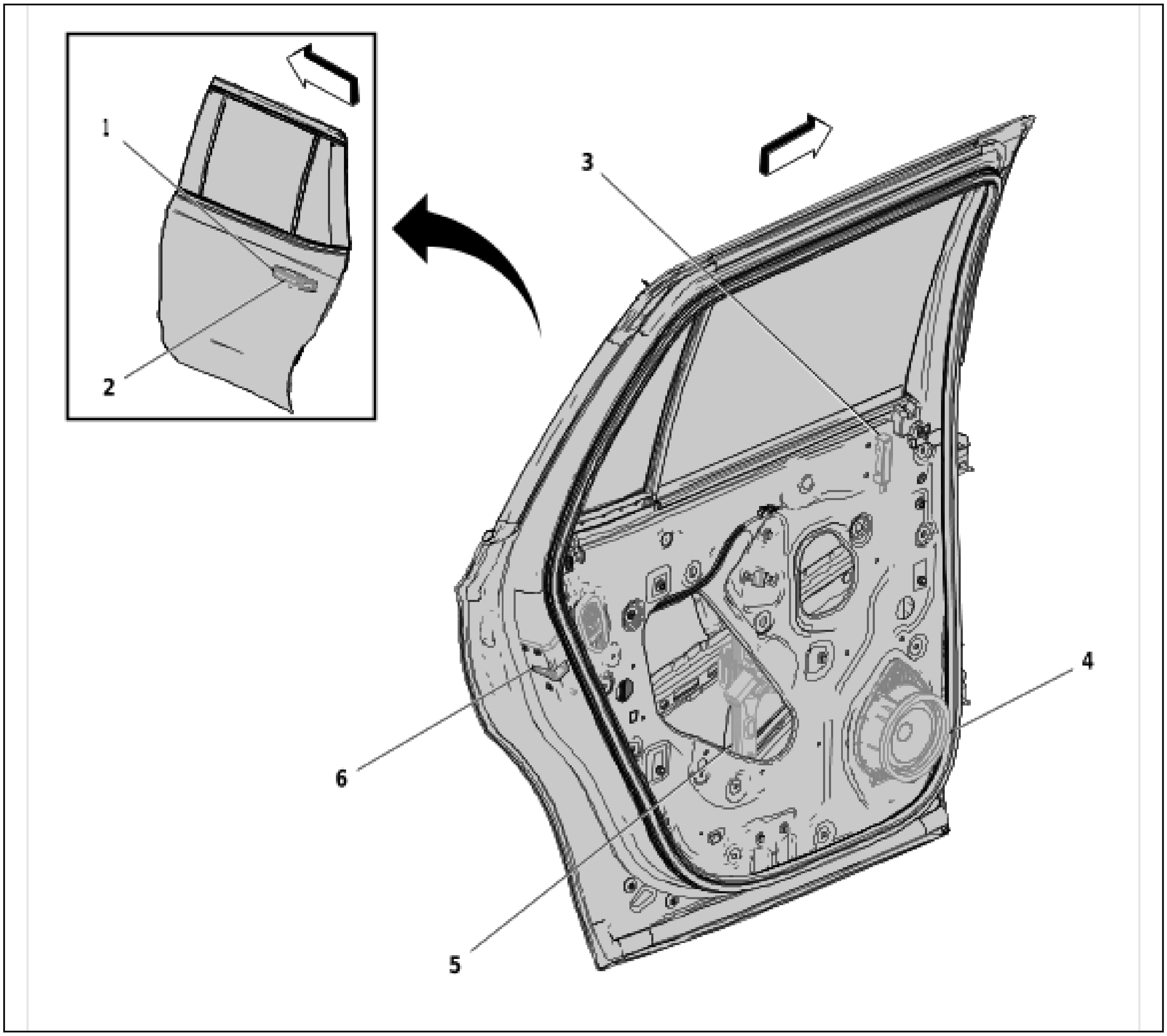
## Left Rear Door Components (LWB)



6678504

| Items |
|---|
| (1) A24LR Rear Side Door Outside Handle - Left |
| (2) B27LR Rear Side Door Outside Handle Switch - Left |
| (3) T10L Low Frequency Body Side Antenna - Left |
| (4) P19AL Radio Rear Side Door Speaker - Left |
| (5) M74LR Rear Side Door Window Regulator Motor - Left |
| (6) A23LR Rear Side Door Latch - Left |

## Left Rear Door Components (SWB)

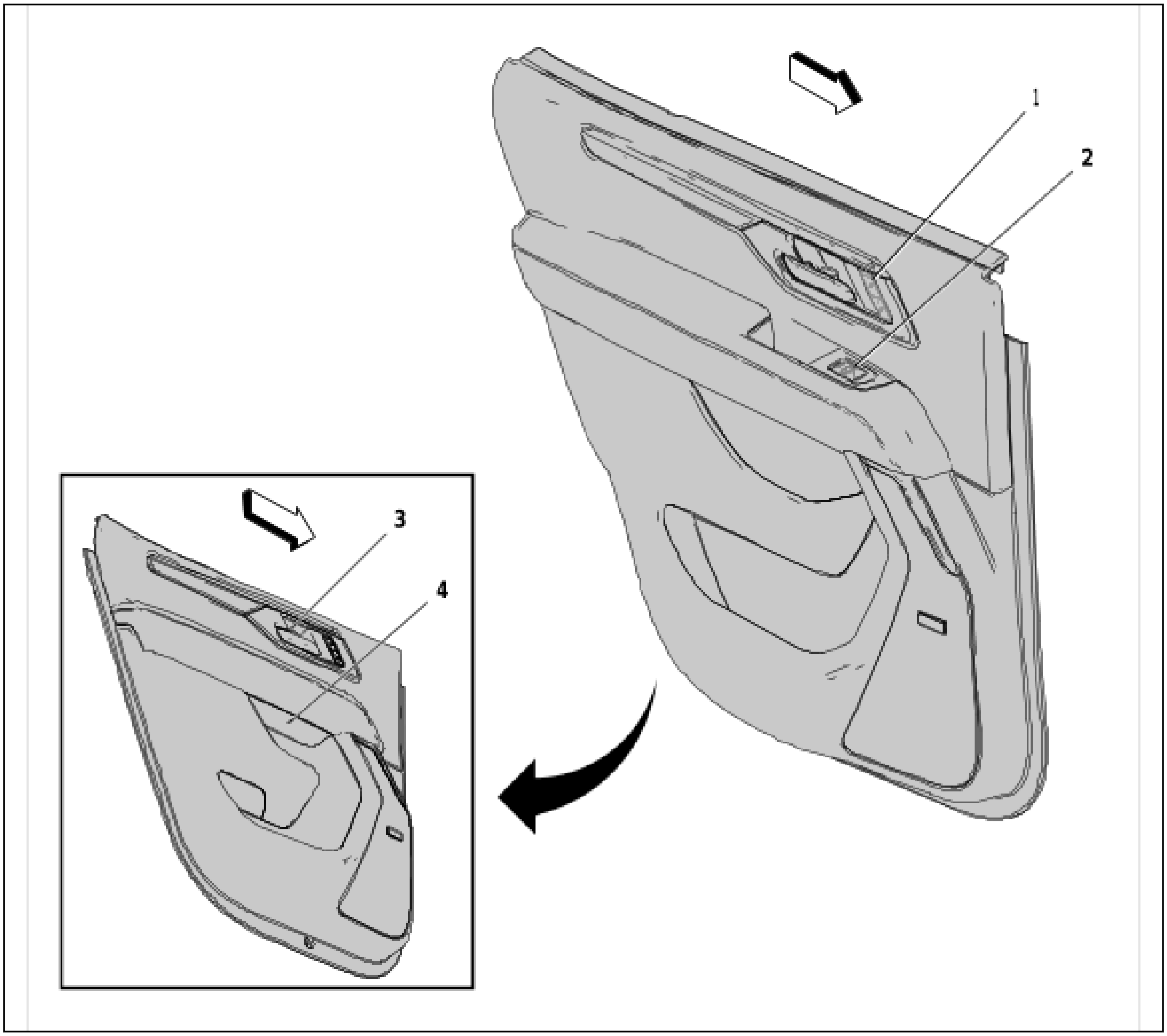


6678505

**Items**

(1) A24LR Rear Side Door Outside Handle - Left
(2) B27LR Rear Side Door Outside Handle Switch - Left
(3) T10L Low Frequency Body Side Antenna - Left
(4) P19AL Radio Rear Side Door Speaker - Left
(5) M74LR Rear Side Door Window Regulator Motor - Left
(6) A23LR Rear Side Door Latch - Left

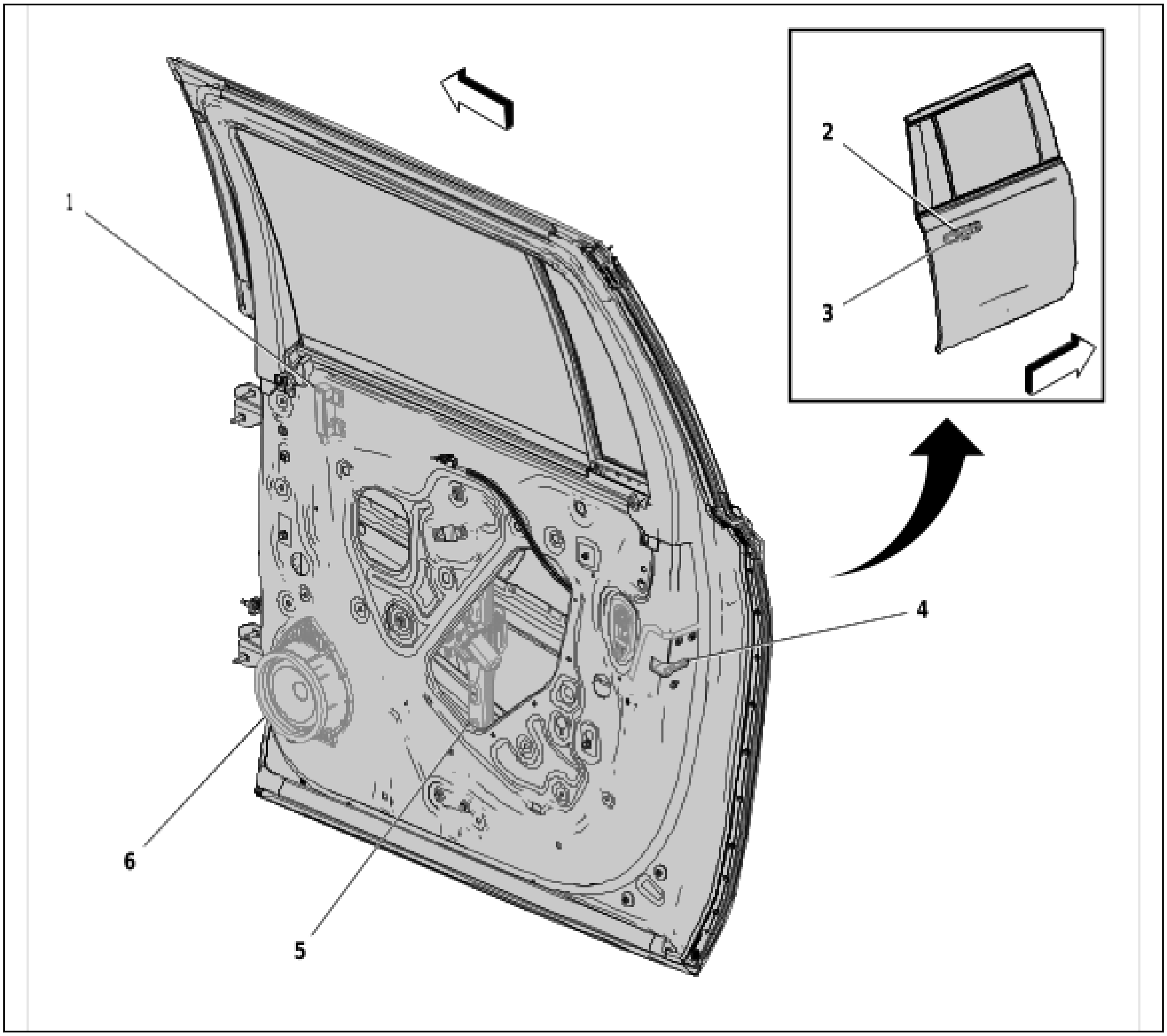
## Left Rear Door Trim Components



6678506

| Items |
|---|
| (1) S13LR Door Lock Switch - Left Rear |
| (2) S79LR Rear Side Door Window Switch - Left |
| (3) E63LR Rear Side Door Inside Handle Illumination Lamp - Left |
| (4) E55LR Rear Side Door Pocket Illumination Lamp - Left |

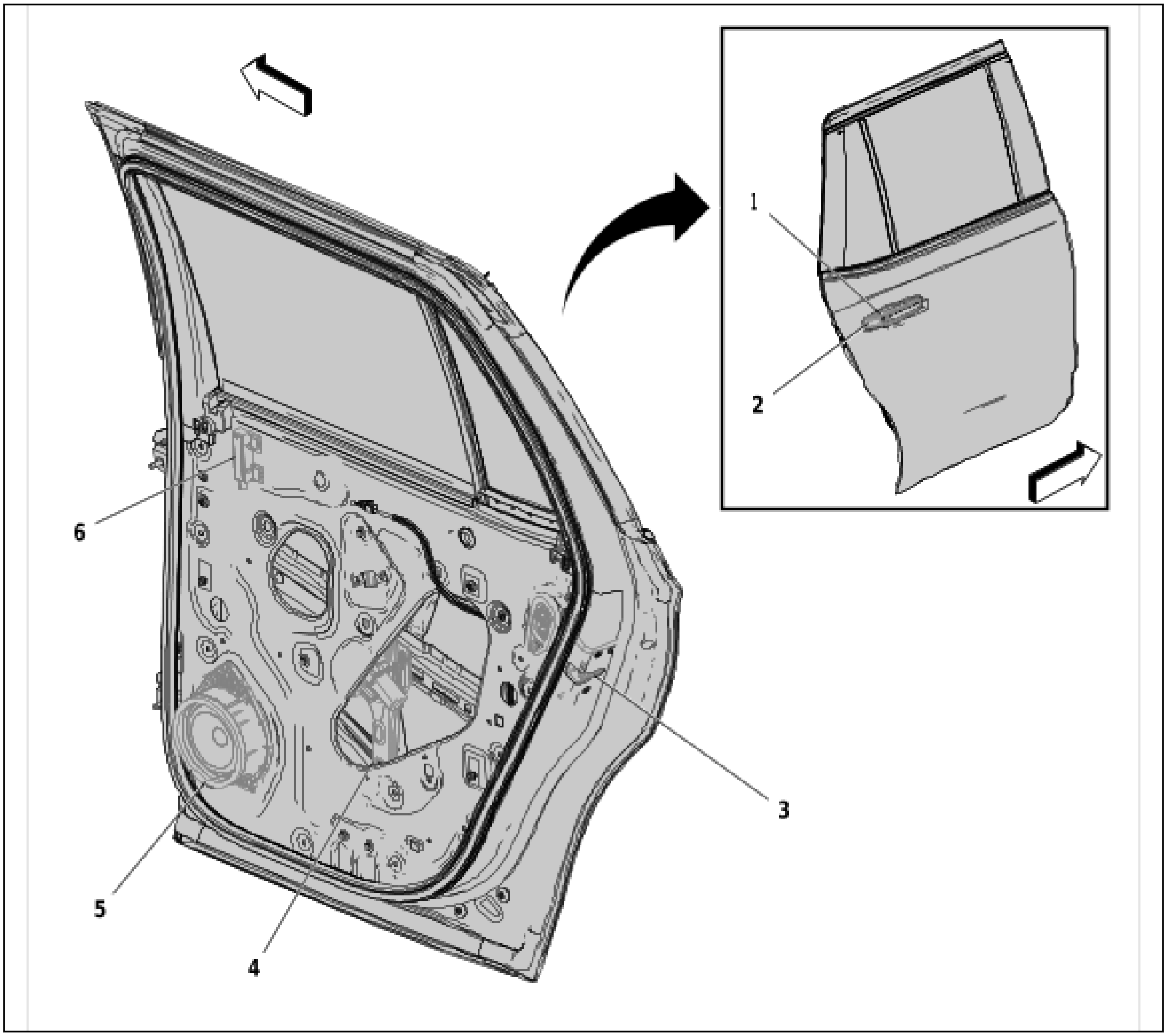
## Right Rear Door Components (LWB)



6678507

| Items |
|---|
| (1) T10R Low Frequency Body Side Antenna - Right |
| (2) A24RR Rear Side Door Outside Handle - Right |
| (3) B27RR Rear Side Door Outside Handle Switch - Right |
| (4) A23RR Rear Side Door Latch - Right |
| (5) M74RR Rear Side Door Window Regulator Motor - Right |
| (6) P19AM Radio Rear Side Door Speaker - Right |

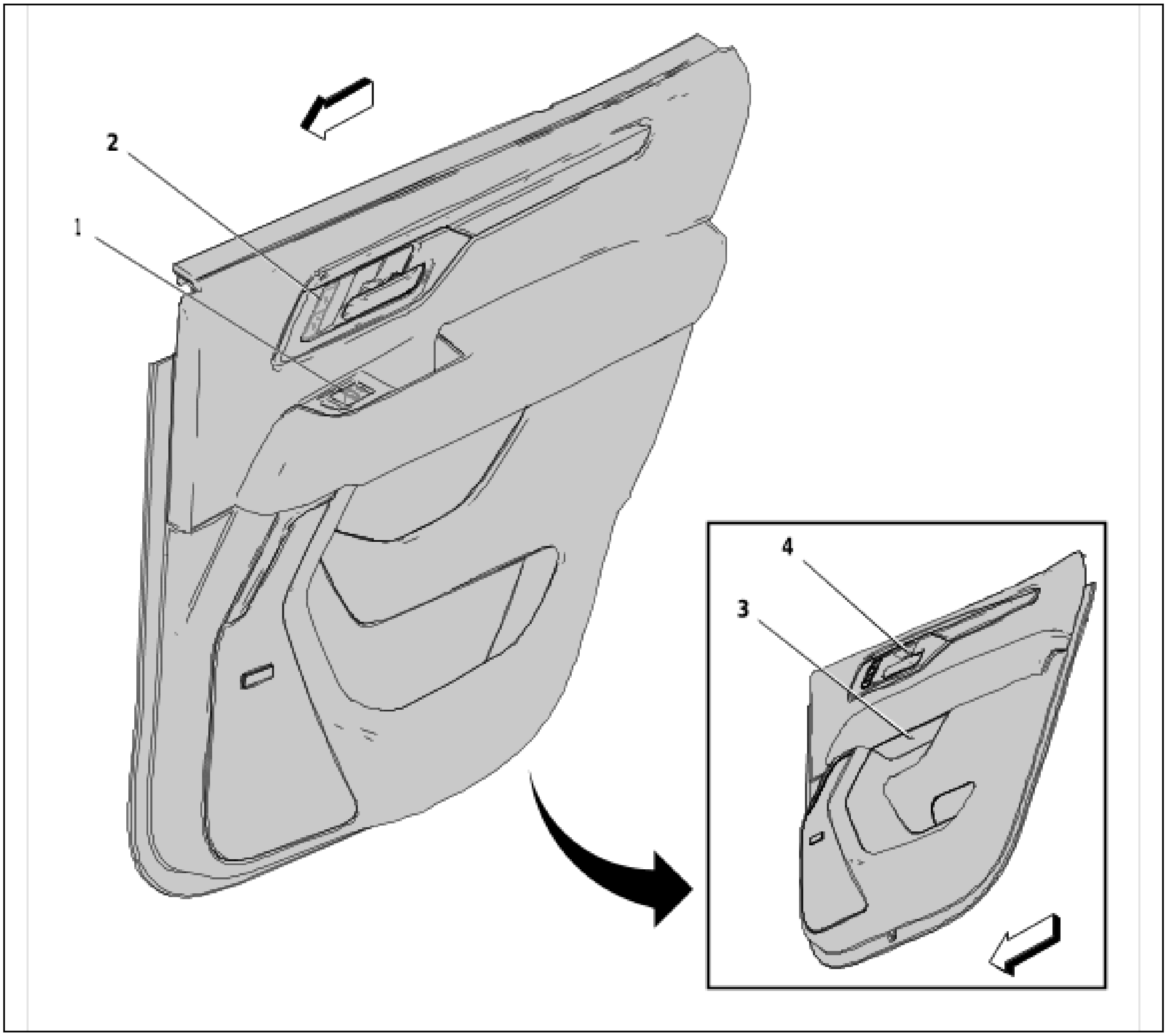
## Right Rear Door Components (SWB)



6678508

| Items |
|---|
| (1) A24RR Rear Side Door Outside Handle - Right |
| (2) B27RR Rear Side Door Outside Handle Switch - Right |
| (3) A23RR Rear Side Door Latch - Right |
| (4) M74RR Rear Side Door Window Regulator Motor - Right |
| (5) P19AM Radio Rear Side Door Speaker - Right |
| (6) T10R Low Frequency Body Side Antenna - Right |

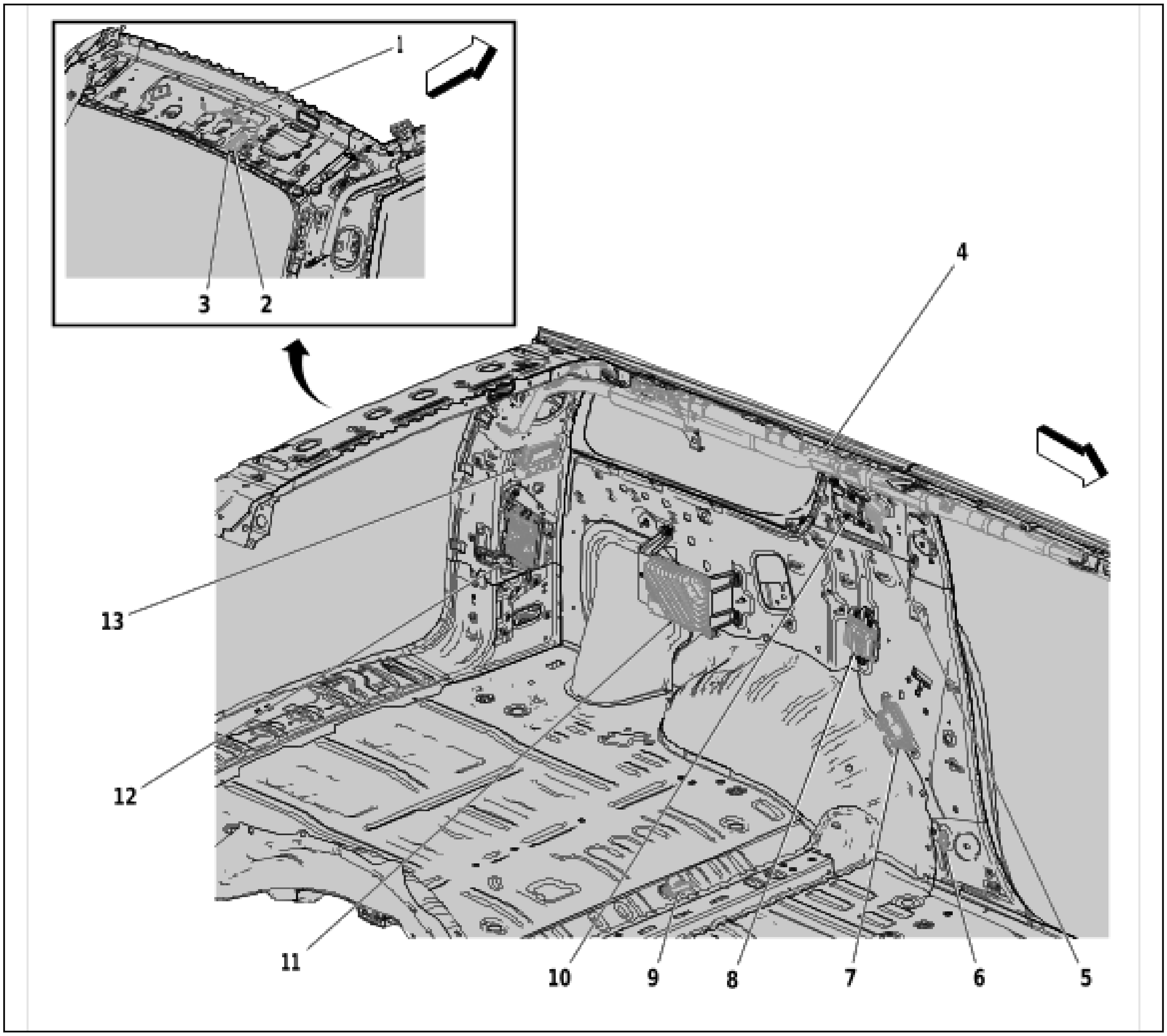
### Right Rear Door Trim Components



6678509

| Items |
|---|
| (1) S79RR Rear Side Door Window Switch - Right |
| (2) S13RR Door Lock Switch - Right Rear |
| (3) E55RR Rear Side Door Pocket Illumination Lamp - Right |
| (4) E63RR Rear Side Door Inside Handle Illumination Lamp - Right |

### Left Rear and Upper of Luggage Compartment Components - Body (LWB)

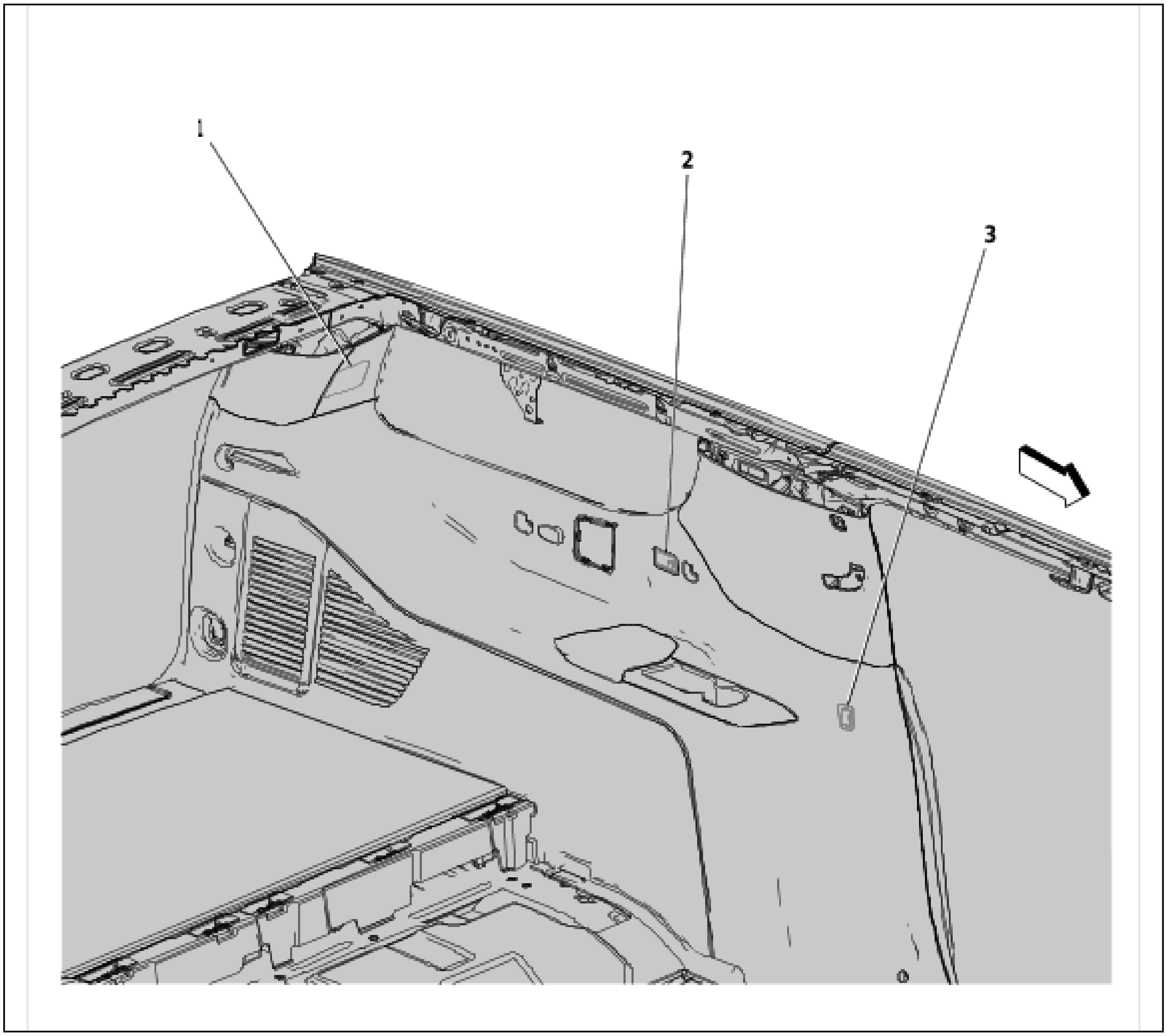


6685742

| Items |
|---|
| (1) R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp |
| (2) T35AF Radio Antenna Amplifier - AM/FM (- U2Q) |
| (3) T35FD Radio Antenna Amplifier - FM2/DAB (U2Q) |
| (4) F105LA Front and Rear and 3rd Row Roof Rail Airbag - Left |
| (5) K77 Remote Function Actuator Module |
| (6) B63LR Airbag Side Impact Rear Sensor - Left Door |
| (7) K164 Differential Control Module (G96) |
| (8) K38 Chassis Control Module (G96) |
| (9) T10E Low Frequency Rear Compartment Antenna (- (5W4 / 9C1)) |
| (10) K313 Occupant Presence Module (RS0 / RSM) |

| Items |
|---|
| (11) T3 Audio Amplifier (UQS) |
| (12) X53A Body Wiring Harness Junction Block - Rear |
| (13) K194 Rear Gate Module (TB5 / TCP) |

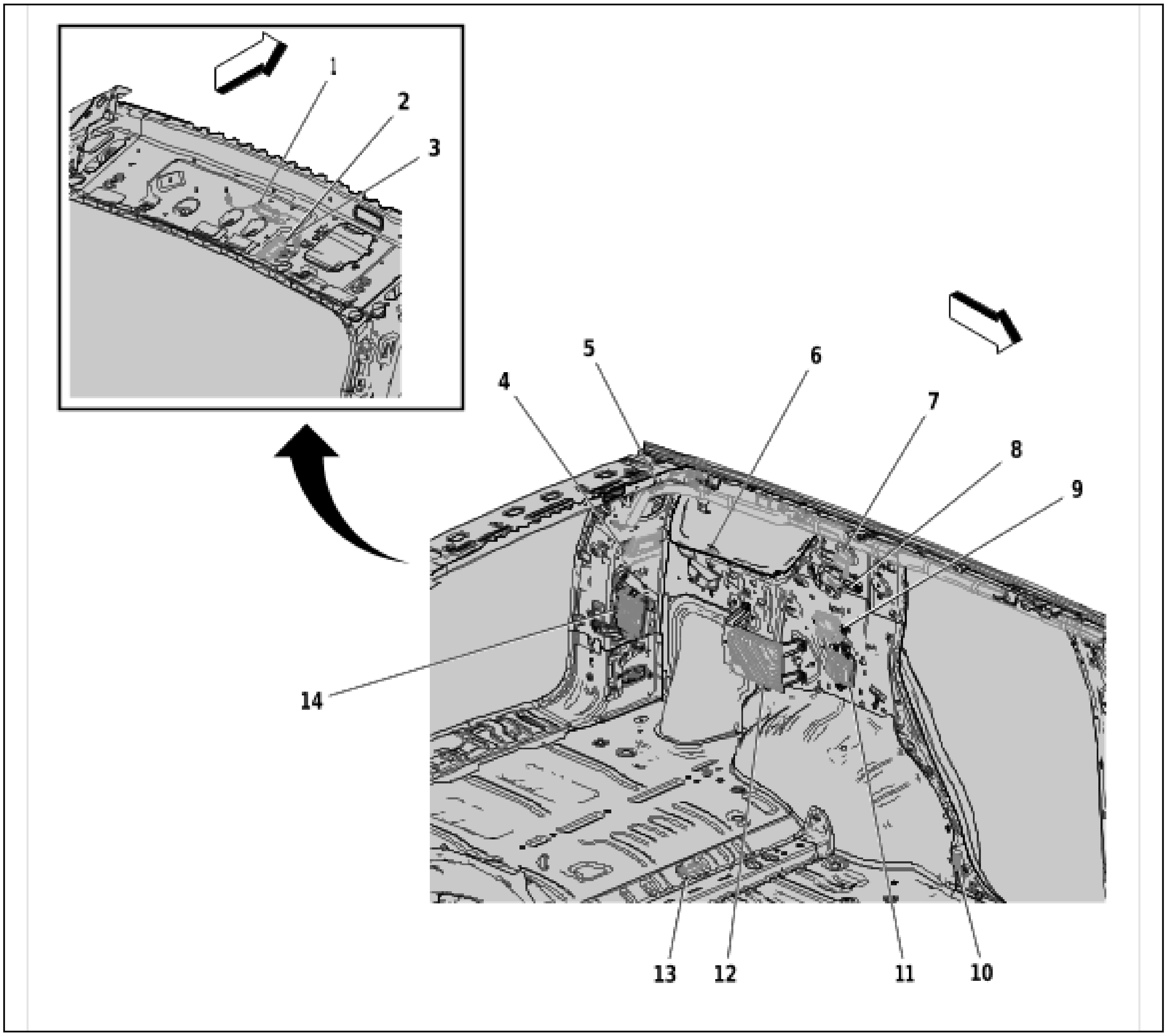
### Left Rear of Luggage Compartment Components - Trim (LWB)



6685743

| Items |
|---|
| (1) P19M Radio Body Rear Corner Upper Garnish Molding Speaker - Left (UQS) |
| (2) X92BCL USB Receptacle - 3rd Row Seat Left |
| (3) S143L Rear Seat Back Folding Switch - 2nd Row Left (ATN / ATT) |

### Left Rear and Upper of Luggage Compartment Components - Body (SWB)

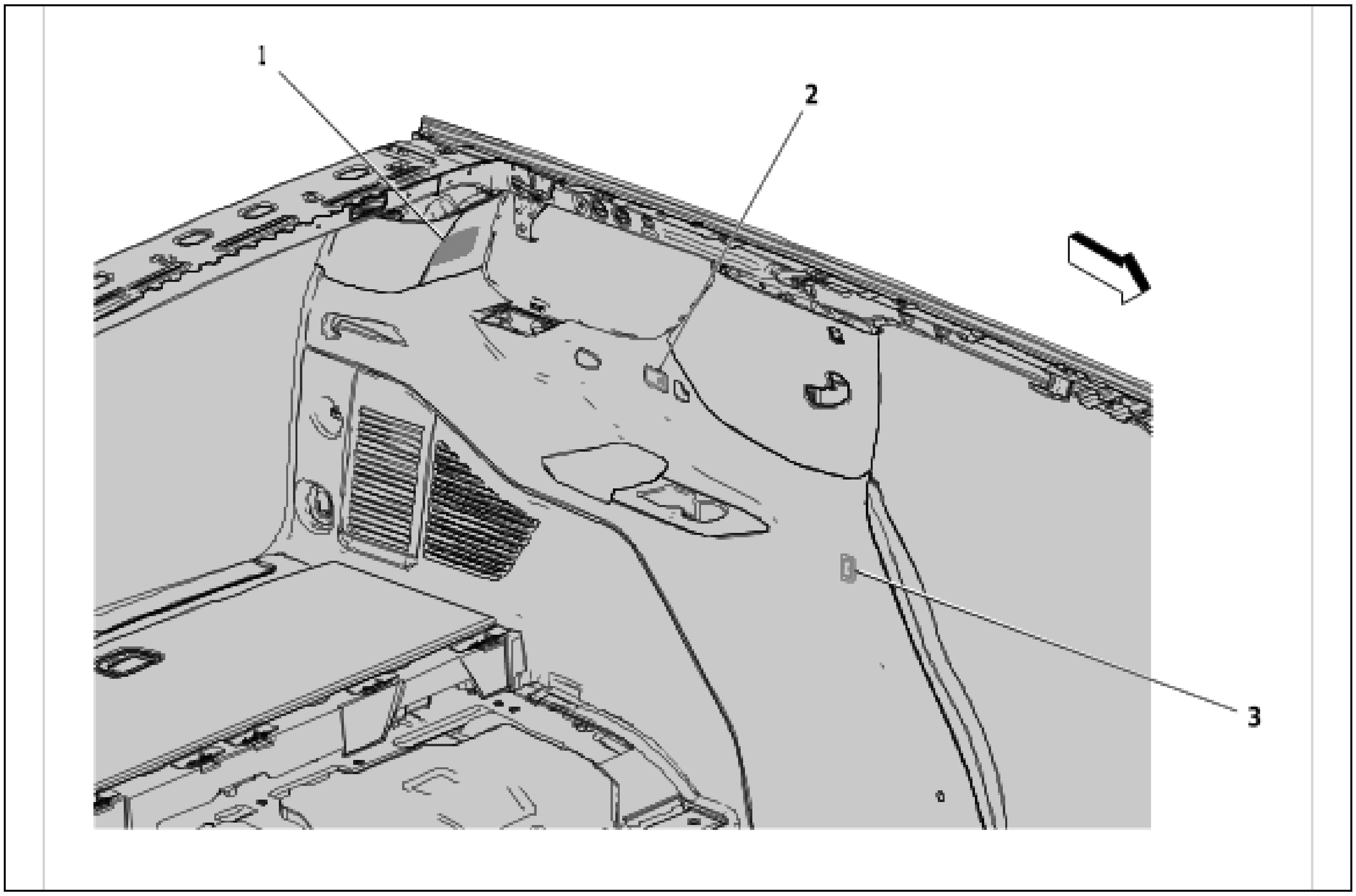


6685744

| Items |
|---|
| (1) R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp |
| (2) T35AF Radio Antenna Amplifier - AM/FM (- U2Q) |
| (3) T35FD Radio Antenna Amplifier - FM2/DAB (U2Q) |
| (4) K194 Rear Gate Module (TB5 / TCP) |
| (5) F105LA Front and Rear and 3rd Row Roof Rail Airbag - Left |
| (6) B159BL Body Side Rear Window Glass Breakage Sensor - Left (UTU) |
| (7) K77 Remote Function Actuator Module |
| (8) K313 Occupant Presence Module (RS0 / RSM) |
| (9) K164 Differential Control Module (G96) |
| (10) B63LR Airbag Side Impact Rear Sensor - Left Door |

| Items |
|---|
| (11) K38 Chassis Control Module (G96) |
| (12) T3 Audio Amplifier (UQS) |
| (13) T10E Low Frequency Rear Compartment Antenna (-(5W4 / 9C1)) |
| (14) X53A Body Wiring Harness Junction Block - Rear |

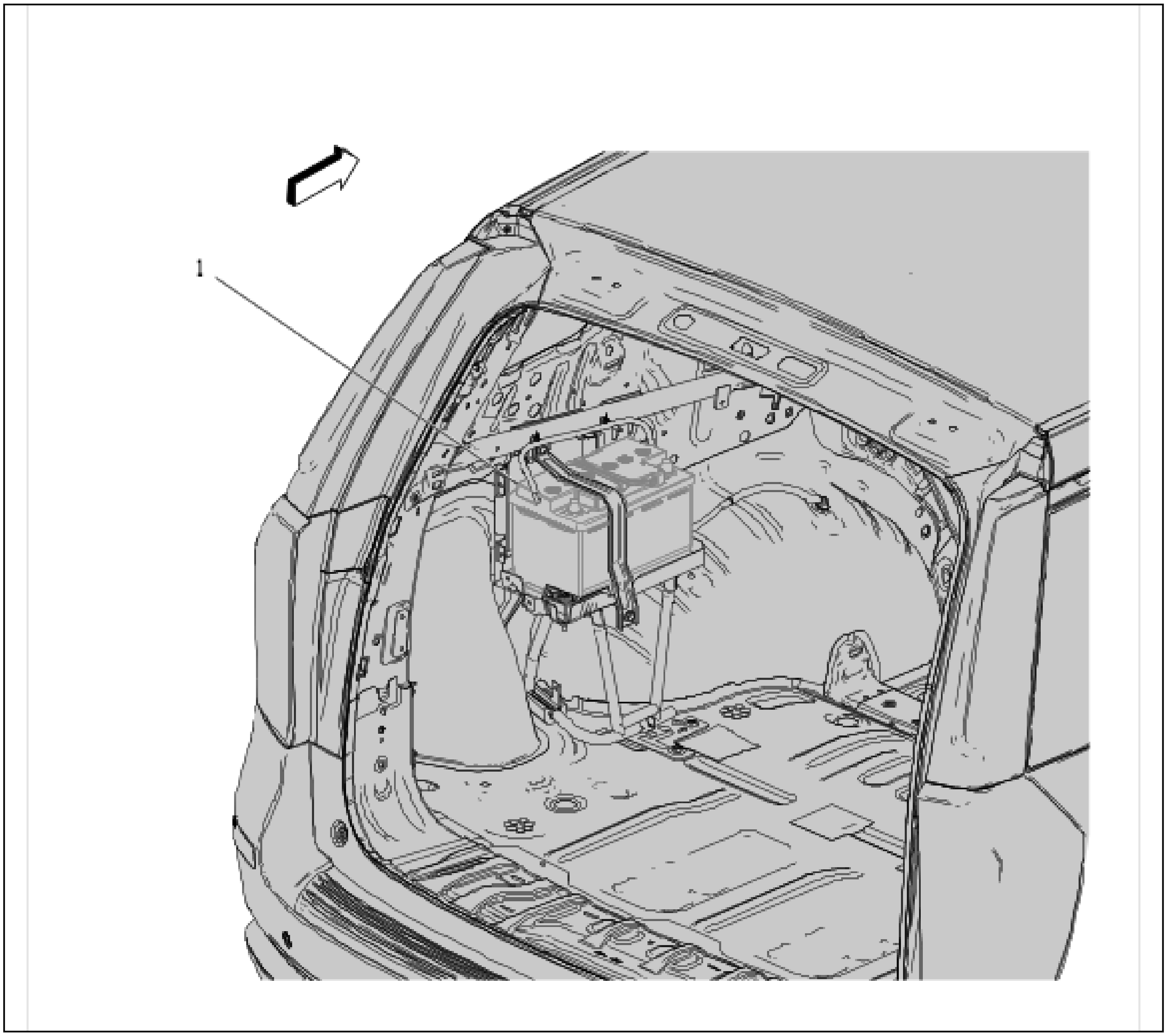
### Left Rear of Luggage Compartment Components - Trim (SWB)



6685745

| Items |
|---|
| (1) P19M Radio Body Rear Corner Upper Garnish Molding Speaker - Left (UQS) |
| (2) X92BCL USB Receptacle - 3rd Row Seat Left |
| (3) S143L Rear Seat Back Folding Switch - 2nd Row Left (ATN / ATT) |

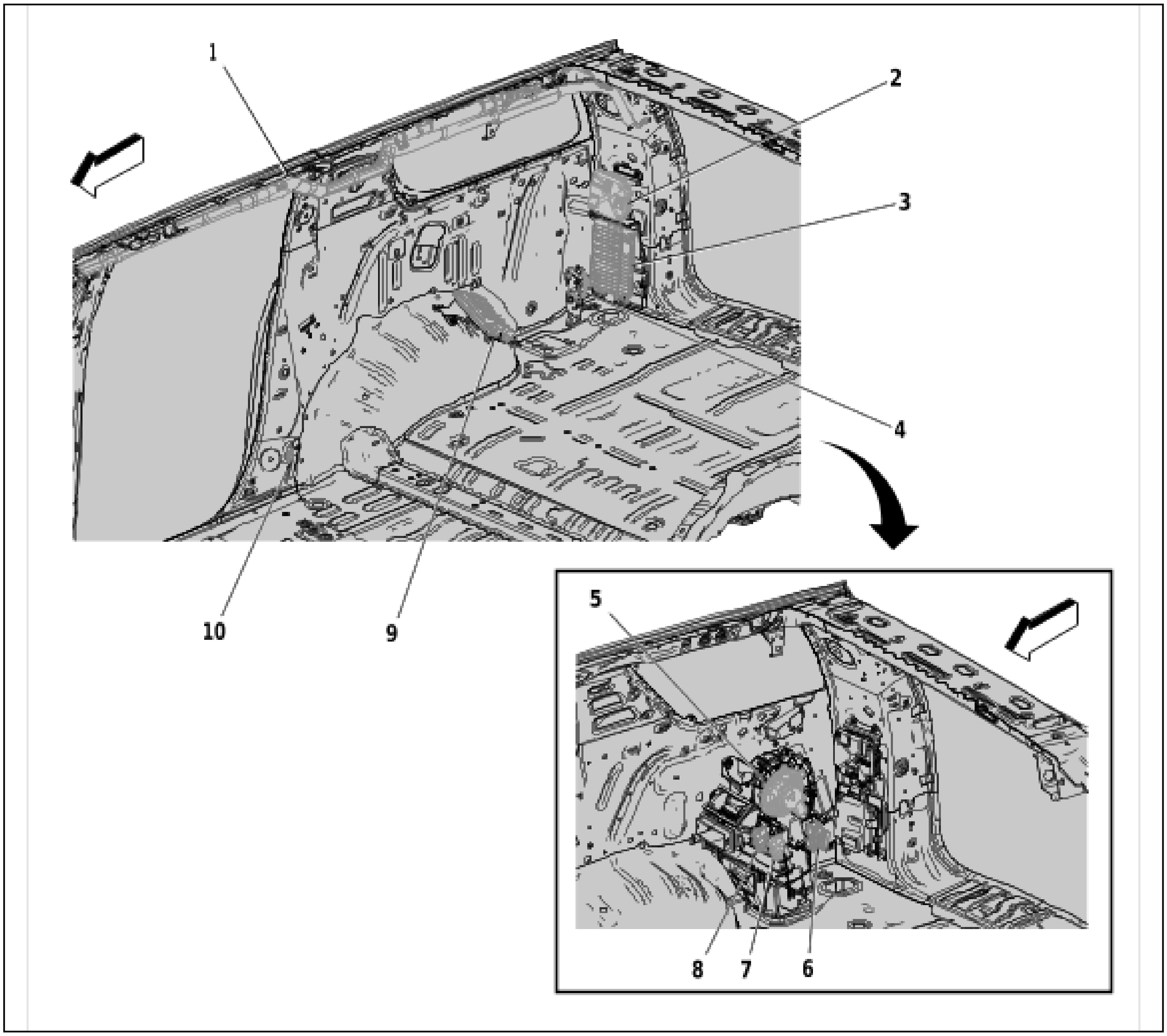
### Luggage Compartment - Auxiliary Battery (5W4 / 9C1)



6678287

| Items |
|---|
| (1) C1B Battery - Auxiliary (5W4 / 9C1) |

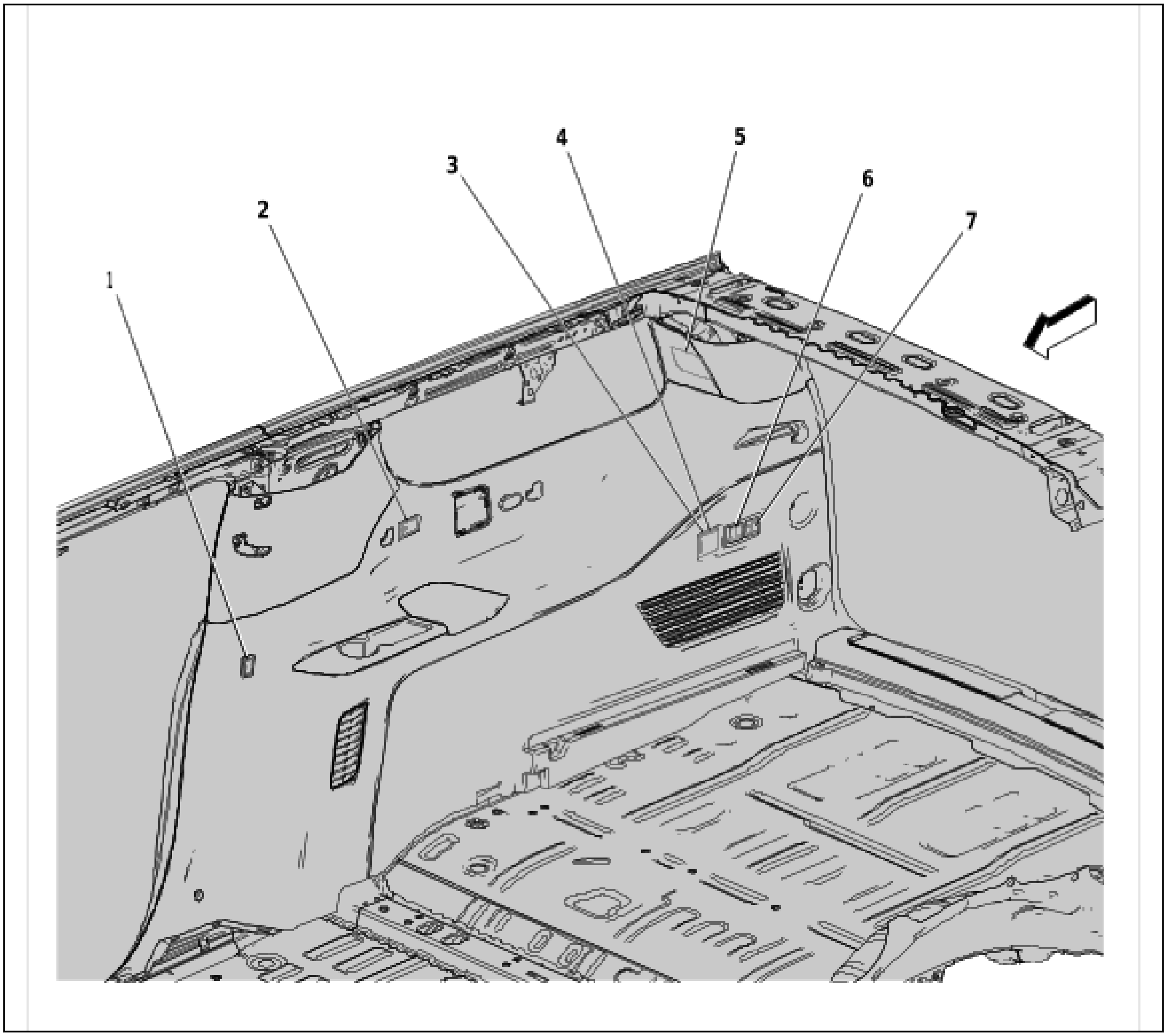
## Right Rear of Luggage Compartment Components - Body (LWB)



6685746

| Items |
|---|
| (1) F105RA Front and Rear and 3rd Row Roof Rail Airbag - Right |
| (2) T1 DC/AC Converter Control Module (KI4 / KI5) |
| (3) K124 Image Processing Module (UKL) |
| (4) K182 Parking Assist Control Module |
| (5) M8B Blower Motor - Rear |
| (6) K8AB Blower Motor Control Module - Rear |
| (7) M6BP Rear Programmable Temperature Valve Actuator |
| (8) M37BP Rear Programmable Mode Valve Actuator |
| (9) K299R Audio/Video Interface Rear Module (UW9) |
| (10) B63RR Airbag Side Impact Rear Sensor - Right Door |

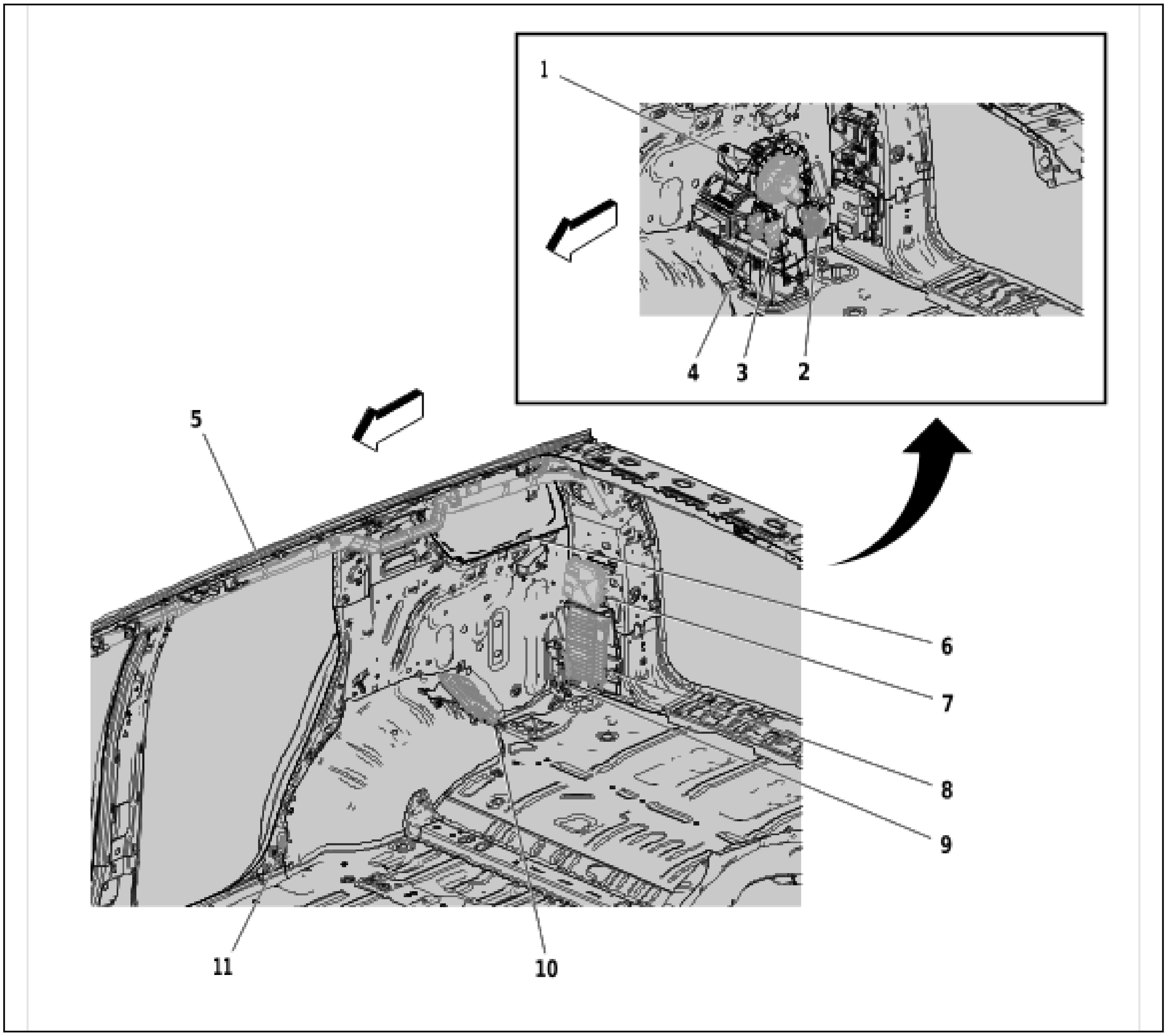
## Right Rear of Luggage Compartment Components - Trim (LWB)



6685747

| Items |
|---|
| (1) S143R Rear Seat Back Folding Switch - 2nd Row Right (ATN / ATT) |
| (2) X92BCR USB Receptacle - 3rd Row Seat Right |
| (3) X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC (KI4) |
| (4) X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC (KI5) |
| (5) P19Z Radio Body Rear Corner Upper Garnish Molding Speaker - Right (UQS) |
| (6) S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment (ATN / ATT) |
| (7) S144B 3rd Row Seat Folding Switch - Rear Compartment (AS8) |

### Right Rear of Luggage Compartment Components - Body (SWB)



6685748

**Items**

(1) M8B Blower Motor - Rear

(2) K8AB Blower Motor Control Module - Rear

(3) M6BP Rear Programmable Temperature Valve Actuator

(4) M37BP Rear Programmable Mode Valve Actuator

(5) F105RA Front and Rear and 3rd Row Roof Rail Airbag - Right

(6) B159BR Body Side Rear Window Glass Breakage Sensor - Right (UTU)

(7) T1 DC/AC Converter Control Module (KI4 / KI5)

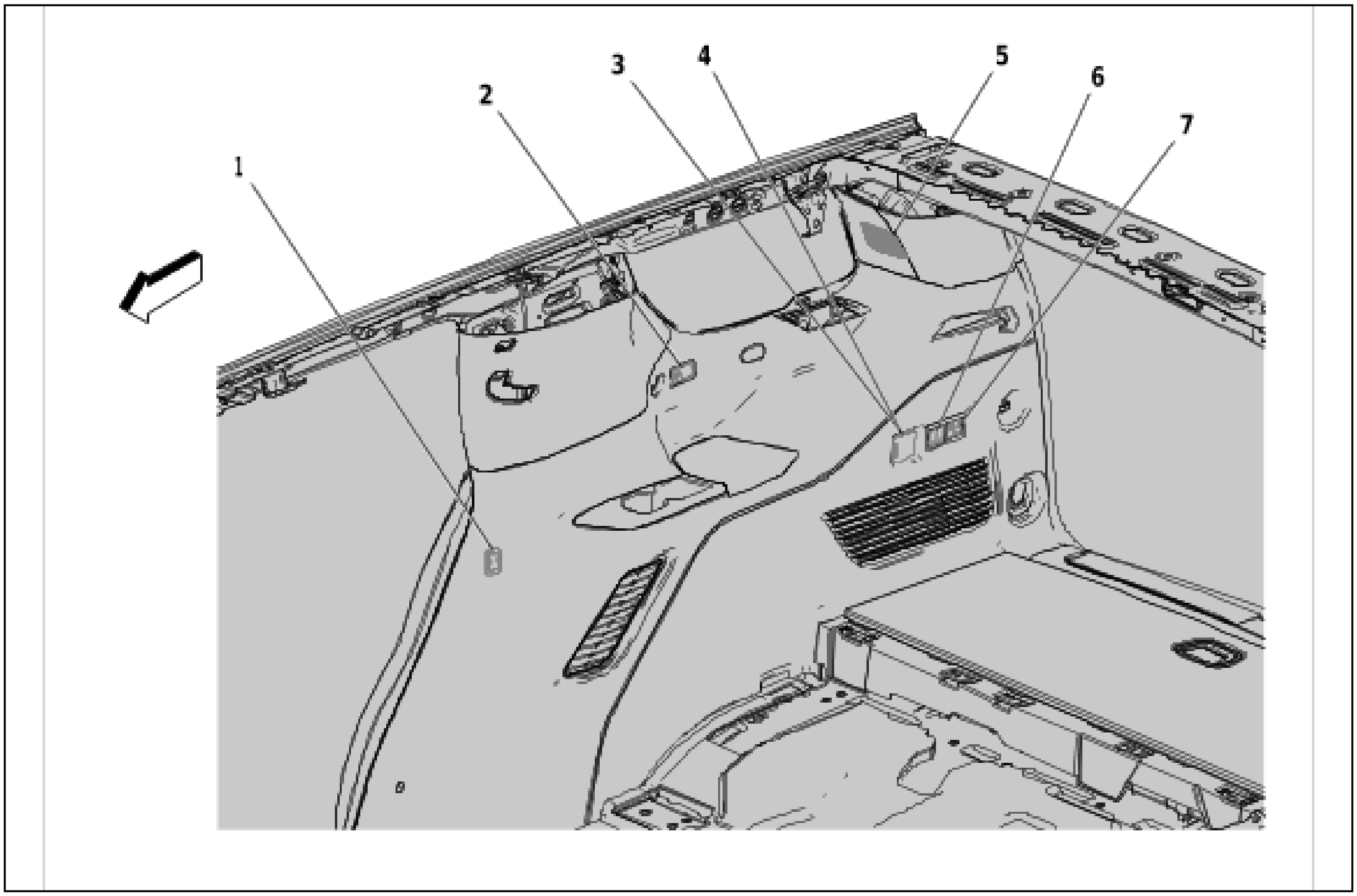
(8) K124 Image Processing Module (UKL)

(9) K182 Parking Assist Control Module

(10) K299R Audio/Video Interface Rear Module (UW9)

(11) B63RR Airbag Side Impact Rear Sensor - Right Door

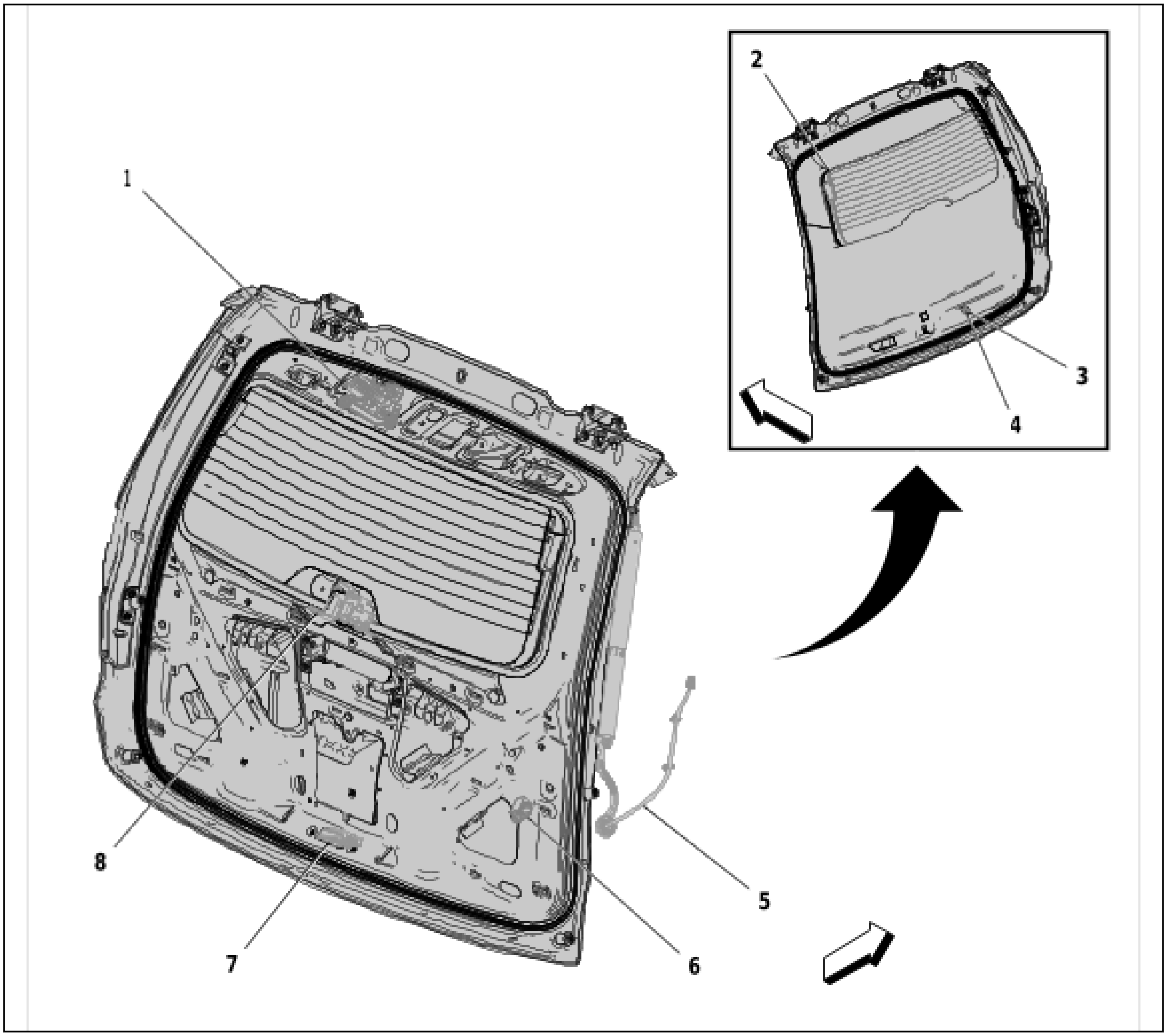
## Right Rear of Luggage Compartment Components - Trim (SWB)



6685749

| Items |
|---|
| (1) S143R Rear Seat Back Folding Switch - 2nd Row Right (ATN / ATT) |
| (2) X92BCR USB Receptacle - 3rd Row Seat Right |
| (3) X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC (KI4) |
| (4) X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC (KI5) |
| (5) P19Z Radio Body Rear Corner Upper Garnish Molding Speaker - Right (UQS) |
| (6) S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment (ATN / ATT) |
| (7) S144B 3rd Row Seat Folding Switch - Rear Compartment (AS8) |

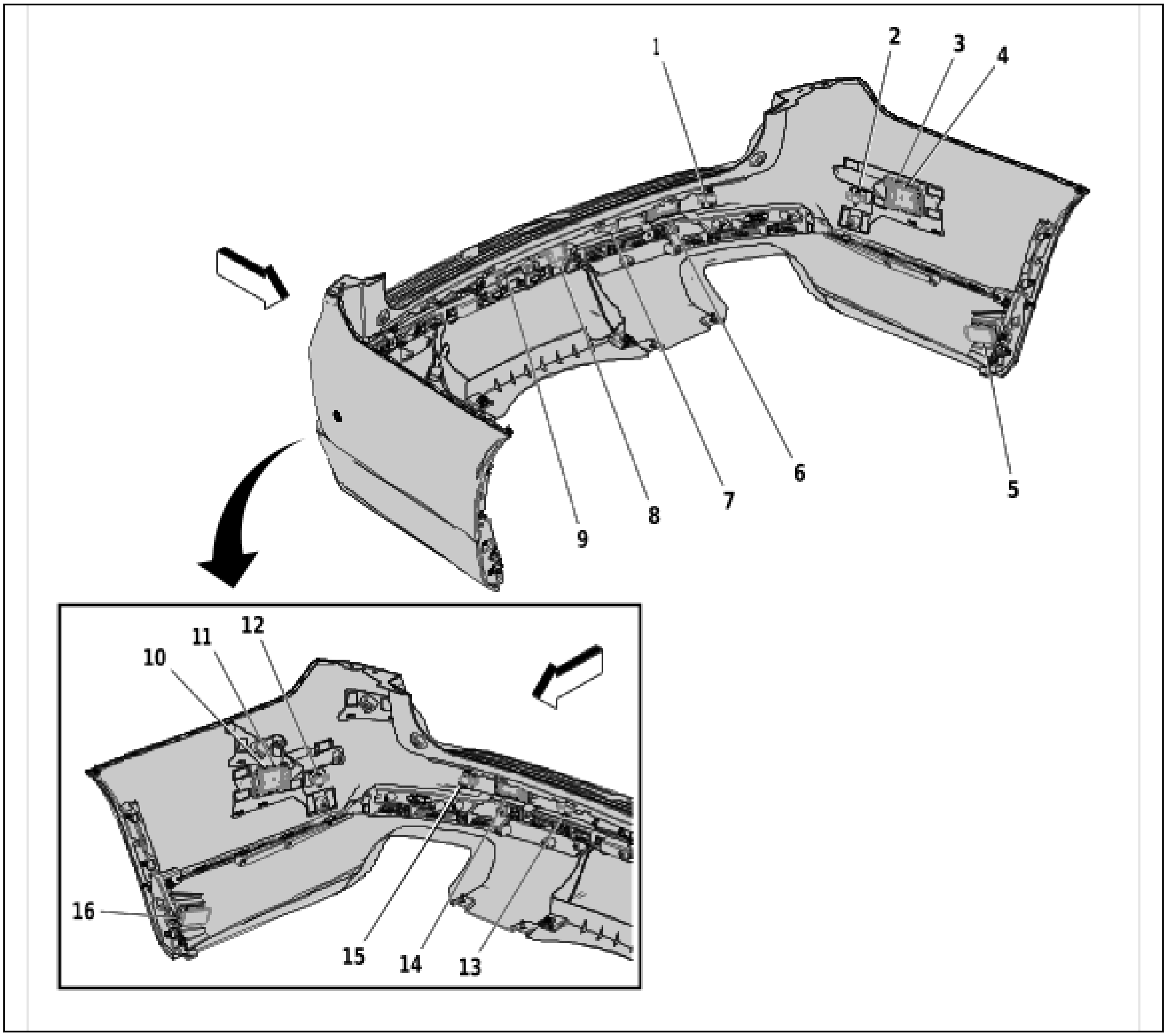
## Liftgate Components



6678288

| Items |
|---|
| (1) M45 Rear Window Wiper Motor |
| (2) E18 Rear Window Defogger Grid |
| (3) B70 Liftgate Close Switch (TB5 / TCP) |
| (4) S194 Emergency Vehicle Warning Rear Lamp Switch (5W4 / 9C1) |
| (5) M31L Liftgate Power Assist Actuator - Left (TB5 / TCP) |
| (6) P37LG Rear Closure Hands Free Alarm (TCP) |
| (7) A23C Liftgate Latch |
| (8) M33 Liftgate Window Latch |

### Front of Rear Fascia Components

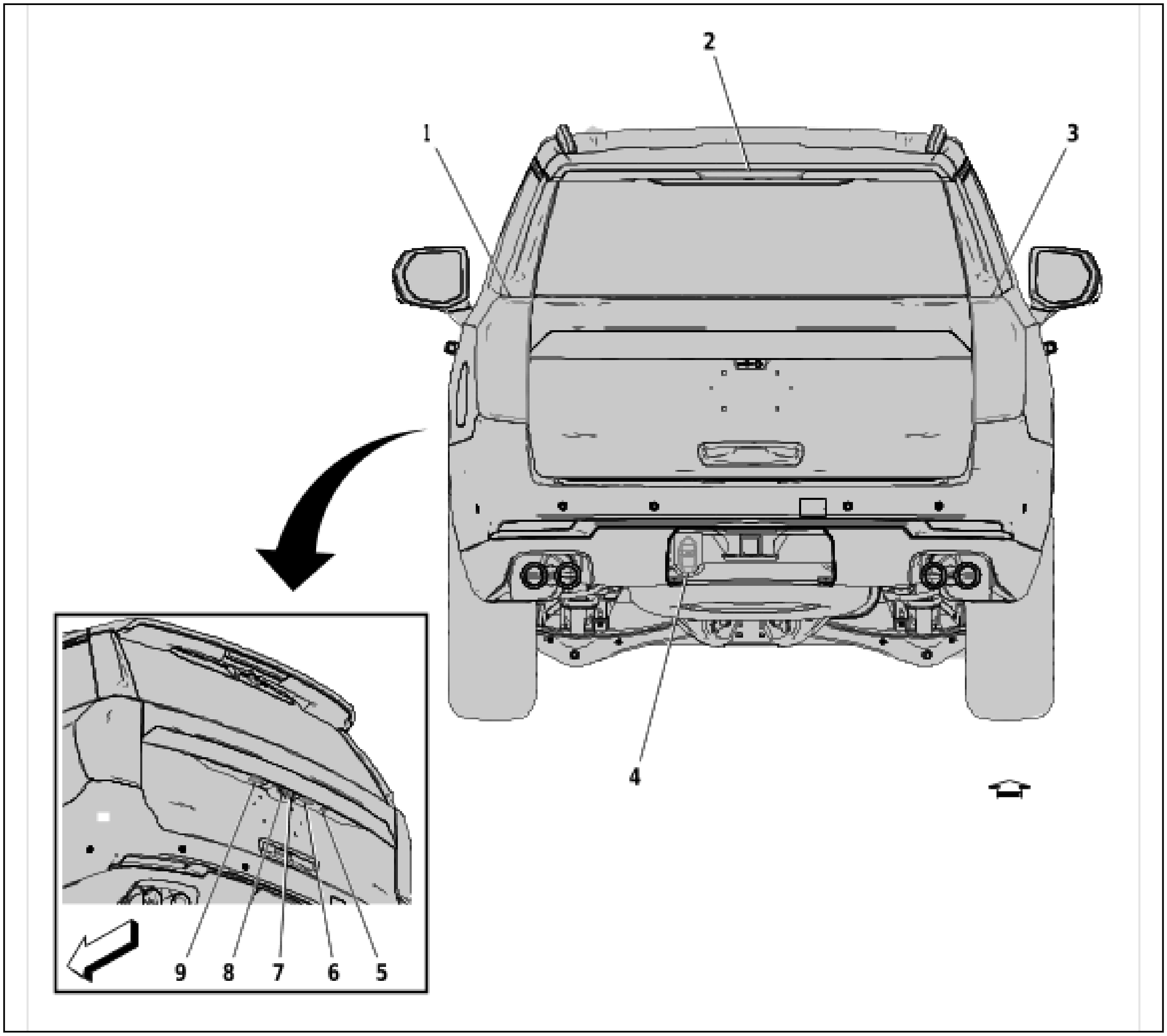


6977880

| Items |
|---|
| (1) B306EB Rear Parking Assist Alarm Outer Sensor - Left |
| (2) B166LRB Advanced Parking Assist Alarm Rear Side Sensor - Left (UKZ) |
| (3) B233LR Short Range Radar Rear Sensor - Left (UKI / UKZ) |
| (4) B233SL Short Range Radar Rear Side Sensor - Left (UKL) |
| (5) B342D UHF Low Energy Remote Control Access Sensor Transceiver 4 (BOR / BOY) |
| (6) B233LR Short Range Radar Rear Sensor - Left (UKI / UKZ) |
| (7) B306FB Rear Parking Assist Alarm Sensor - Left Middle |
| (8) K214 Trailer Tire Pressure Indicator Module (UET) |
| (9) T10G Low Frequency Rear Bumper Antenna |

| Items |
|---|
| (10) B233SR Short Range Radar Rear Side Sensor - Right (UKL) |
| (11) B233RR Short Range Radar Rear Sensor - Right (UKI / UKZ) |
| (12) B166RRB Advanced Parking Assist Alarm Rear Side Sensor - Right (UKZ) |
| (13) B306GB Rear Parking Assist Alarm Sensor - Right Middle |
| (14) B233RR Short Range Radar Rear Sensor - Right (UKI / UKZ) |
| (15) B306HB Rear Parking Assist Alarm Outer Sensor - Right |
| (16) B342B UHF Low Energy Remote Control Access Sensor Transceiver 2 (BOR / BOY) |

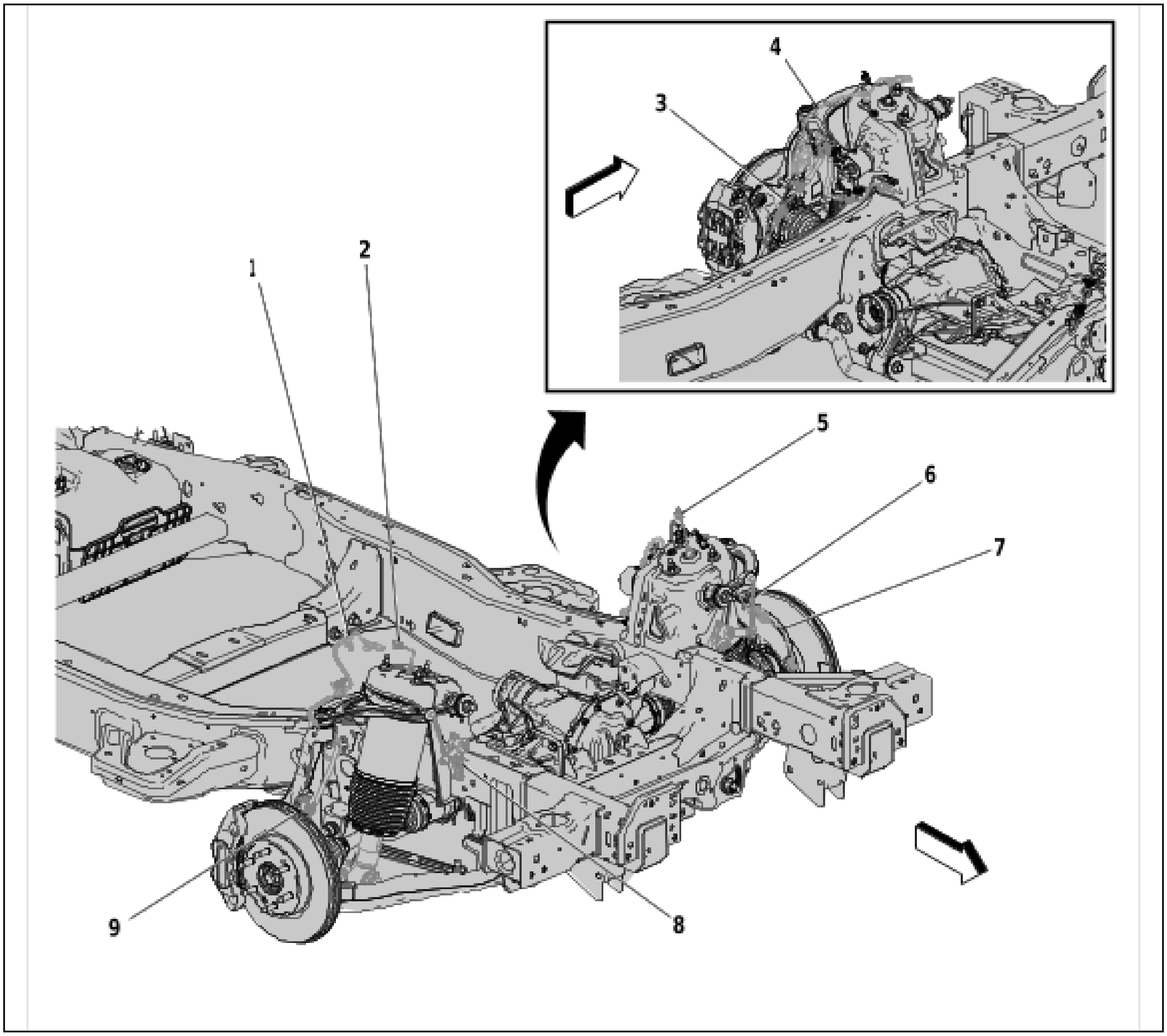
### Rear of Vehicle



6666121

| Items |
|---|
| (1) E42L Rear Body Structure Stop Lamp - Left |
| (2) E6 High Mount Stop Lamp |
| (3) E42R Rear Body Structure Stop Lamp - Right |
| (4) X88B Tow Vehicle Electrical Receptacle |
| (5) S141 Liftgate Window Release Switch - Exterior |
| (6) E7R Rear License Plate Lamp - Right |
| (7) B87 Rearview Driver Information Camera |
| (8) B352 Video Display Inside Rearview Mirror Camera (DRZ) |
| (9) E7L Rear License Plate Lamp - Left |

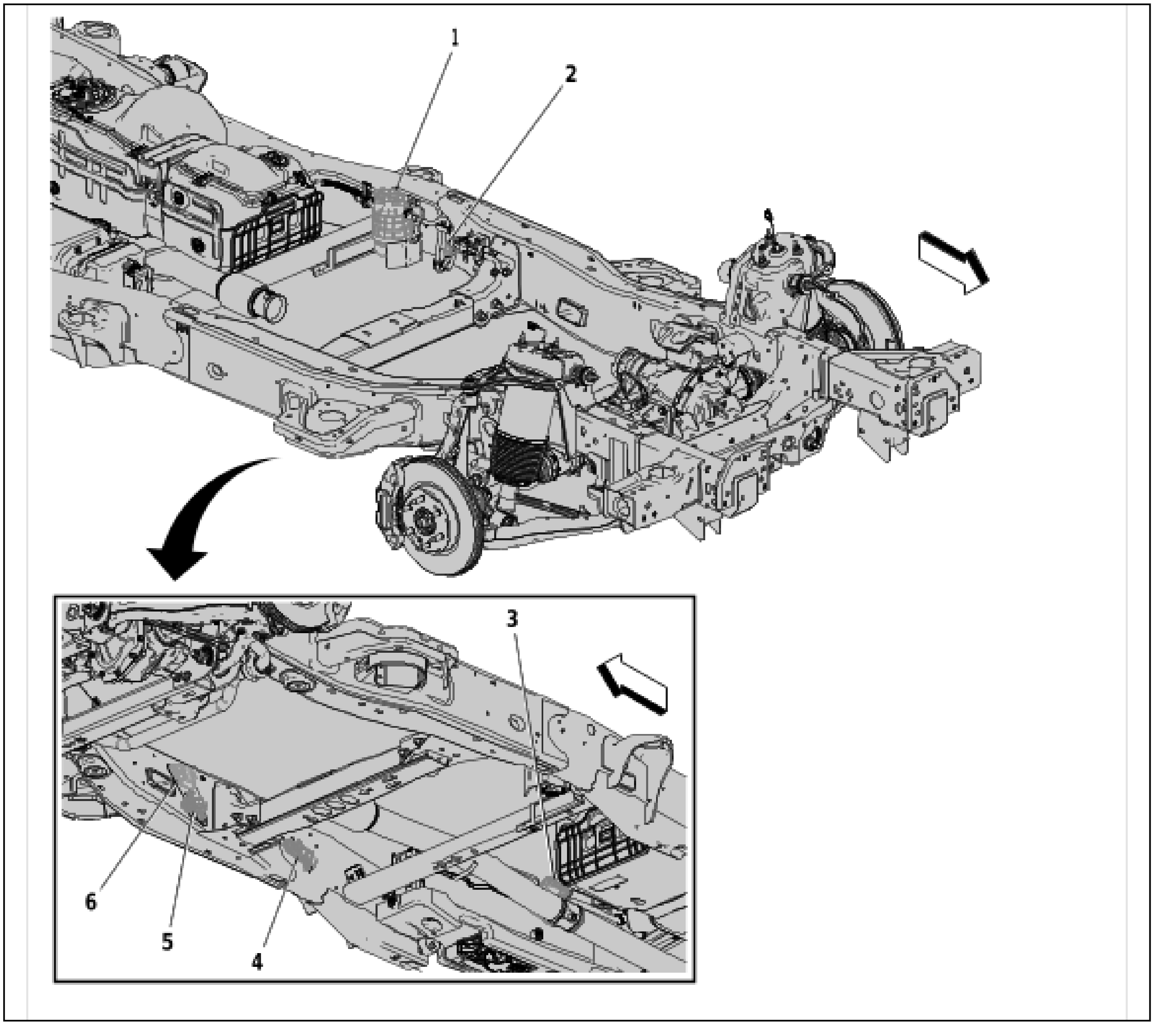
### Suspension and Brake Components - Front



6677049

| Items |
|---|
| (1) B161RF Electronic Suspension Wheel Front Vertical Accelerometer - Right (Z95) |
| (2) Q37RFB Front Shock Absorber Actuator - Right (Z95) |
| (3) B172LF Front Disc Brake Pad Wear Sensor - Left (JBK) |
| (4) B161LF Electronic Suspension Wheel Front Vertical Accelerometer - Left (Z95) |
| (5) Q37LFB Front Shock Absorber Actuator - Left (Z95) |
| (6) B11LF Front Suspension 4 Corner Leveling System Position Sensor - Left (F47) |
| (7) B5LF Front Wheel Speed Sensor - Left |
| (8) B11RF Front Suspension 4 Corner Leveling System Position Sensor - Right (F47) |
| (9) B5RF Front Wheel Speed Sensor - Right |

### Underbody Components - Front (LZ0)

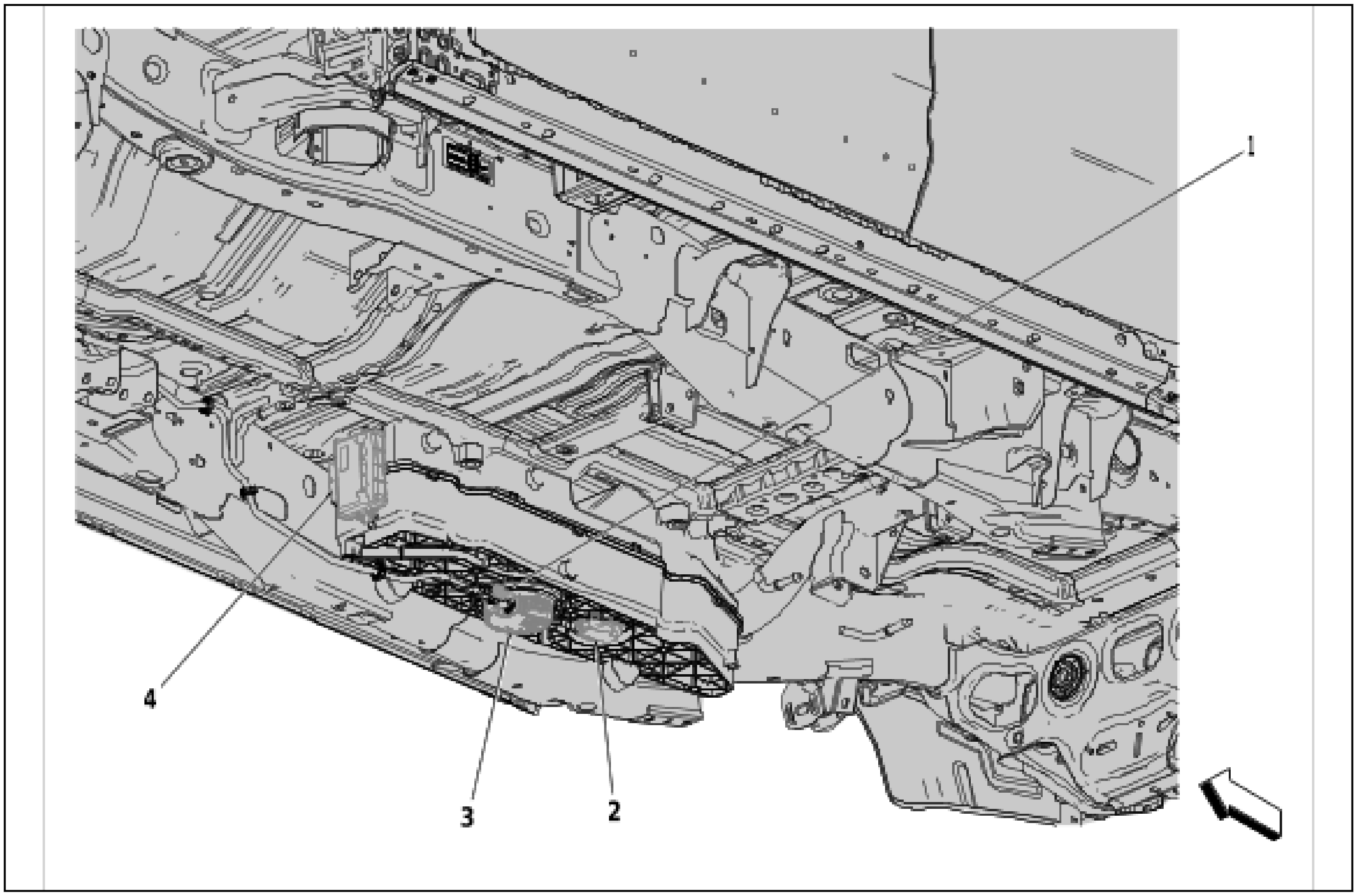


6677050

**Items**

(1) R29 Fuel Filter (LZ0)
(2) B47 Fuel Pressure Sensor
(3) M122 Exhaust Pressure Regulator Valve (LZ0)
(4) B195C Nitrogen Oxides Sensor 3 (LZ0)
(5) B195B Nitrogen Oxides Sensor 2 (LZ0)
(6) B136 Exhaust Particulate Matter Sensor (LZ0)

### Emission Reduction Fluid Tank Reservoir (LZ0)

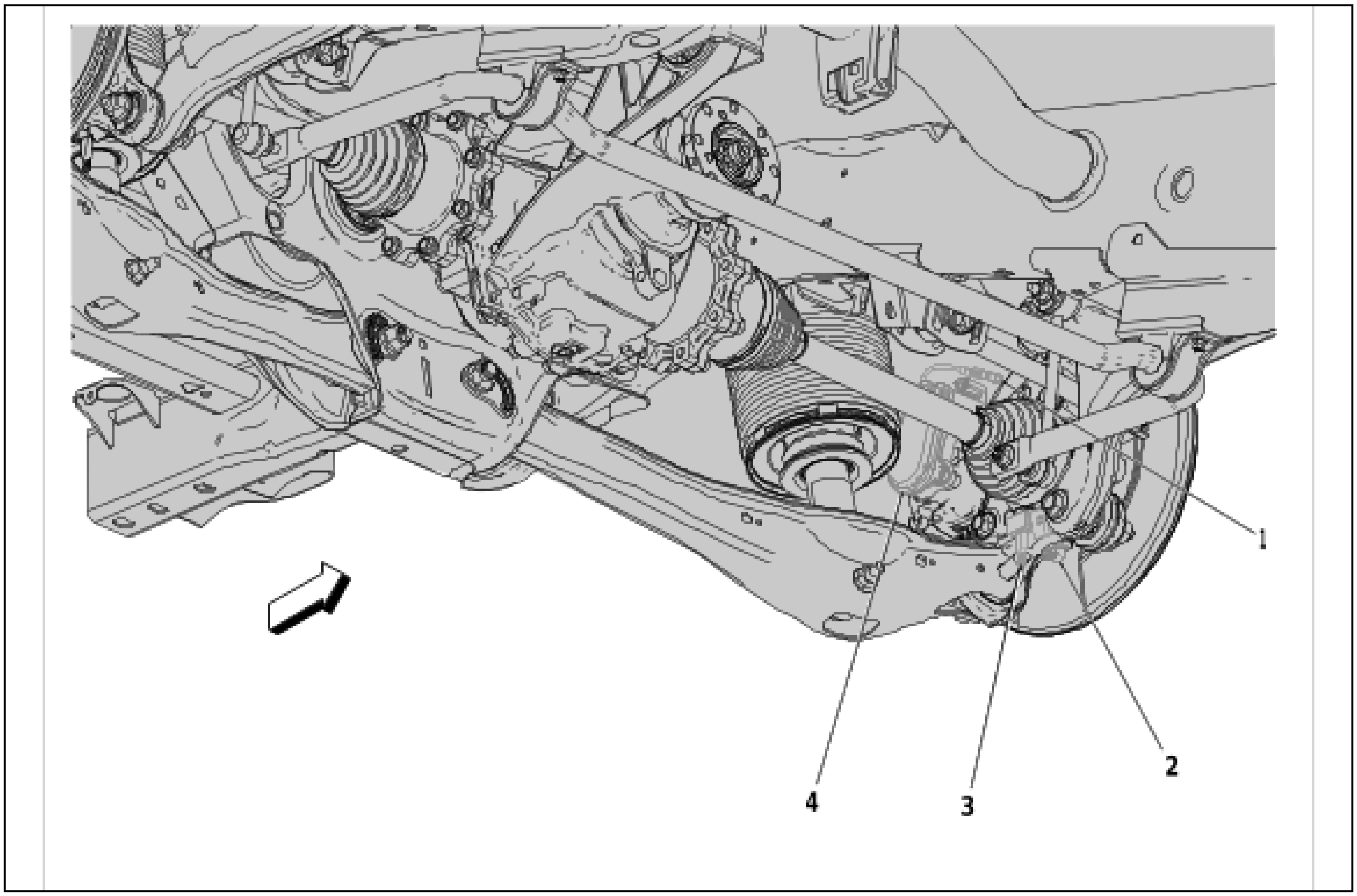


6666122

**Items**

(1) E52 Reductant Heater 2 - Injector Supply Pipe (LZ0)
(2) B212 Reductant Tank Fluid Sensor (LZ0)
(3) A38 Reductant Tank Fluid Supply Pump Module (LZ0)
(4) K115 Reductant Control Module (LZ0)

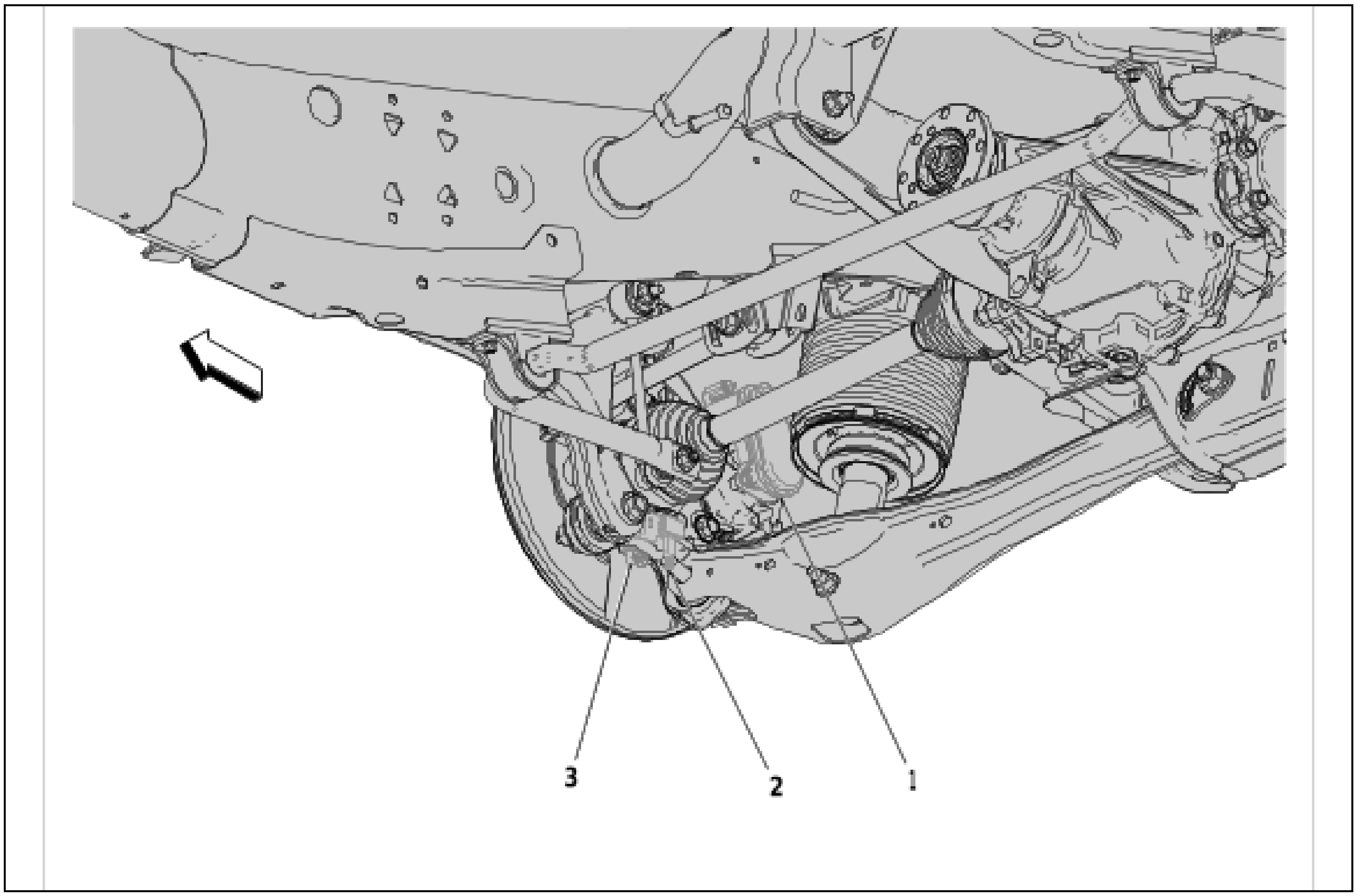
## Suspension and Brake Components - Left Rear



6677051

| Items |
|---|
| (1) B172LR Rear Disc Brake Pad Wear Sensor - Left (JBK) |
| (2) B5LR Rear Wheel Speed Sensor - Left |
| (3) B162LR Electronic Suspension Rear Vertical Accelerometer - Left (Z95) |
| (4) M104L Parking Brake Actuator - Left |

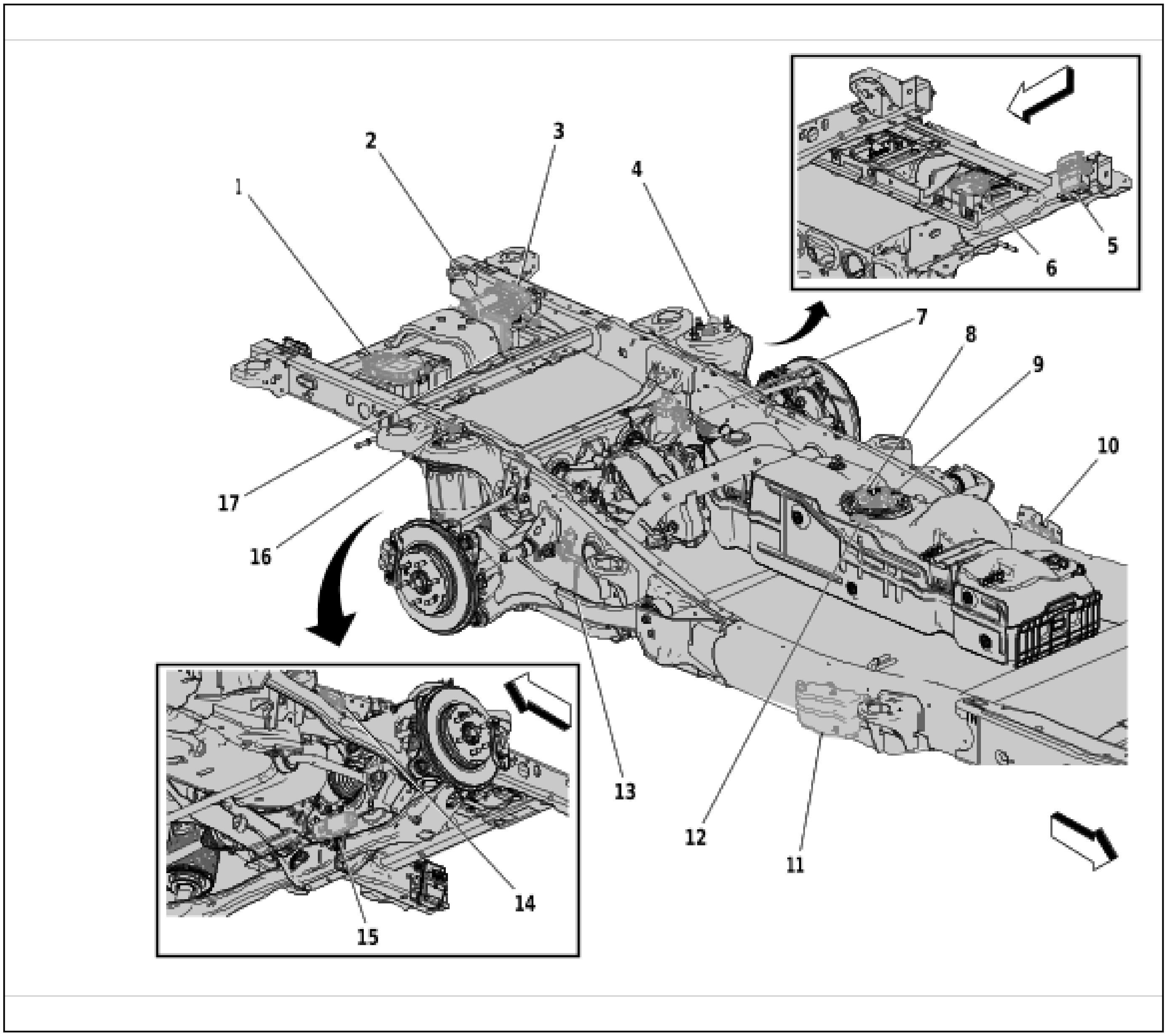
### Suspension and Brake Components - Right Rear



6677052

| Items |
|---|
| (1) M104R Parking Brake Actuator - Right |
| (2) B162RR Electronic Suspension Rear Vertical Accelerometer - Right (Z95) |
| (3) B5RR Rear Wheel Speed Sensor - Right |

### Underbody Components - Rear (LWB)

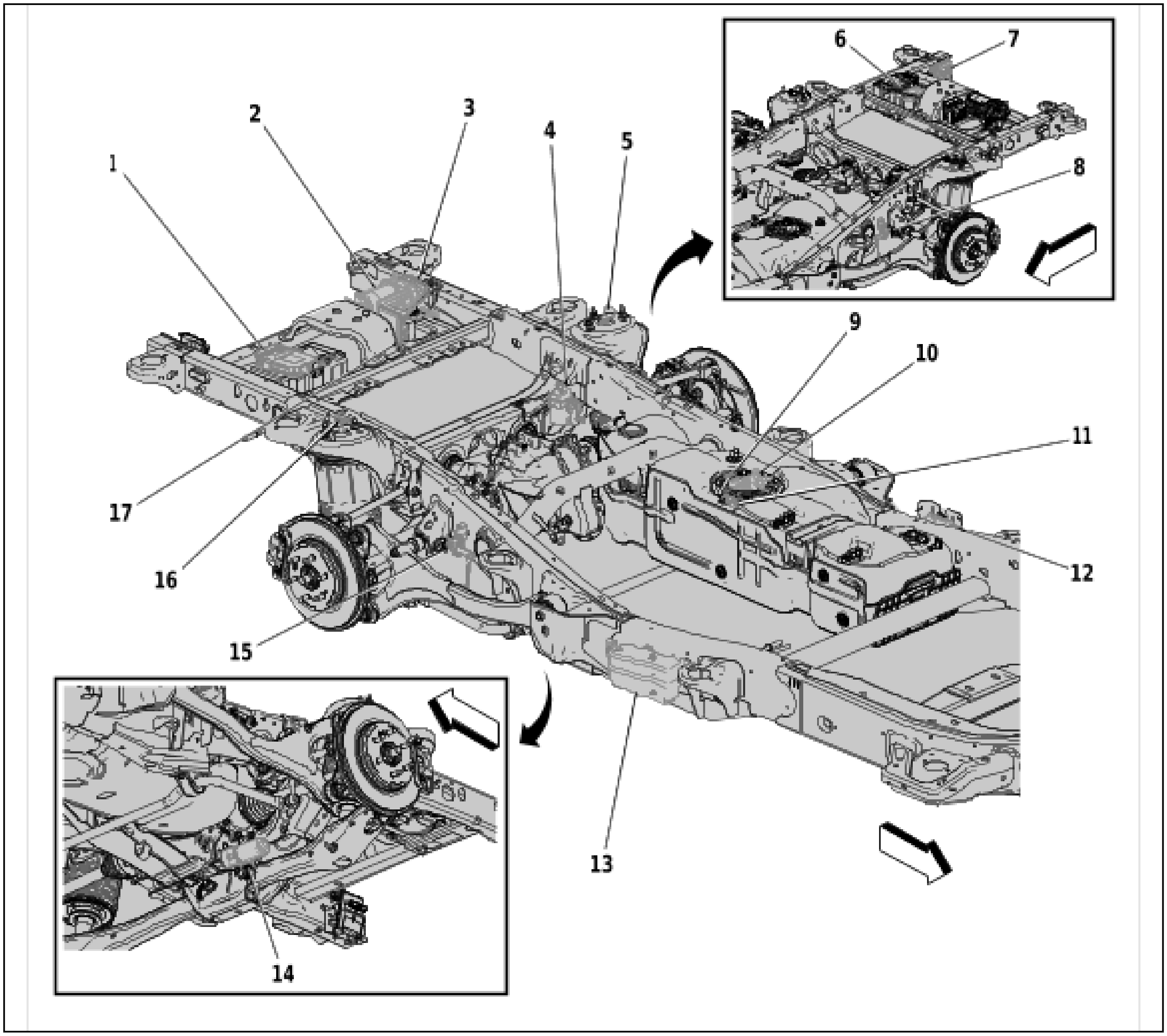


6677053

| Items |
|---|
| (1) K19 Suspension Control Module (Z95) |
| (2) G4 Automatic Level Control Air Compressor (F47) |
| (3) Q4 Automatic Level Control Solenoid Valve (F47) |
| (4) Q37LRB Rear Shock Absorber Actuator - Left (Z95) |
| (5) K68 Trailer Lamp Control Module (UET) |
| (6) K67 Trailer Brake Control Module (JL1) |
| (7) Q13 Evaporative Emission Canister Vent Solenoid Valve (L84 / L87) |
| (8) B150 Fuel Tank Pressure Sensor (L84 / L87) |
| (9) A7 Fuel Tank Fuel Pump Module |
| (10) K111 Fuel Pump Power Control Module |
| (11) K4 Running Board Control Module (B3L) |
| (12) B47 Fuel Pressure Sensor |

| Items |
|---|
| (13) B11RR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Right (F47) |
| (14) B11LR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Left (F47) |
| (15) M135 Differential Lock Motor (G96) |
| (16) Q37RRB Rear Shock Absorber Actuator - Right (Z95) |
| (17) K5 Automatic Level Control Module (F47) |

### Underbody Components - Rear (SWB)



6677054

| Items |
|---|
| (1) K19 Suspension Control Module (Z95) |
| (2) G4 Automatic Level Control Air Compressor (F47) |
| (3) Q4 Automatic Level Control Solenoid Valve (F47) |

**Items**

(4) Q13 Evaporative Emission Canister Vent Solenoid Valve (L84 / L87)

(5) Q37LRB Rear Shock Absorber Actuator - Left (Z95)

(6) K67 Trailer Brake Control Module (JL1)

(7) K68 Trailer Lamp Control Module (UET)

(8) B11LR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Left (F47)

(9) B150 Fuel Tank Pressure Sensor (L84 / L87)

(10) A7 Fuel Tank Fuel Pump Module

(11) B47 Fuel Pressure Sensor

(12) K111 Fuel Pump Power Control Module

(13) K4 Running Board Control Module (B3L)

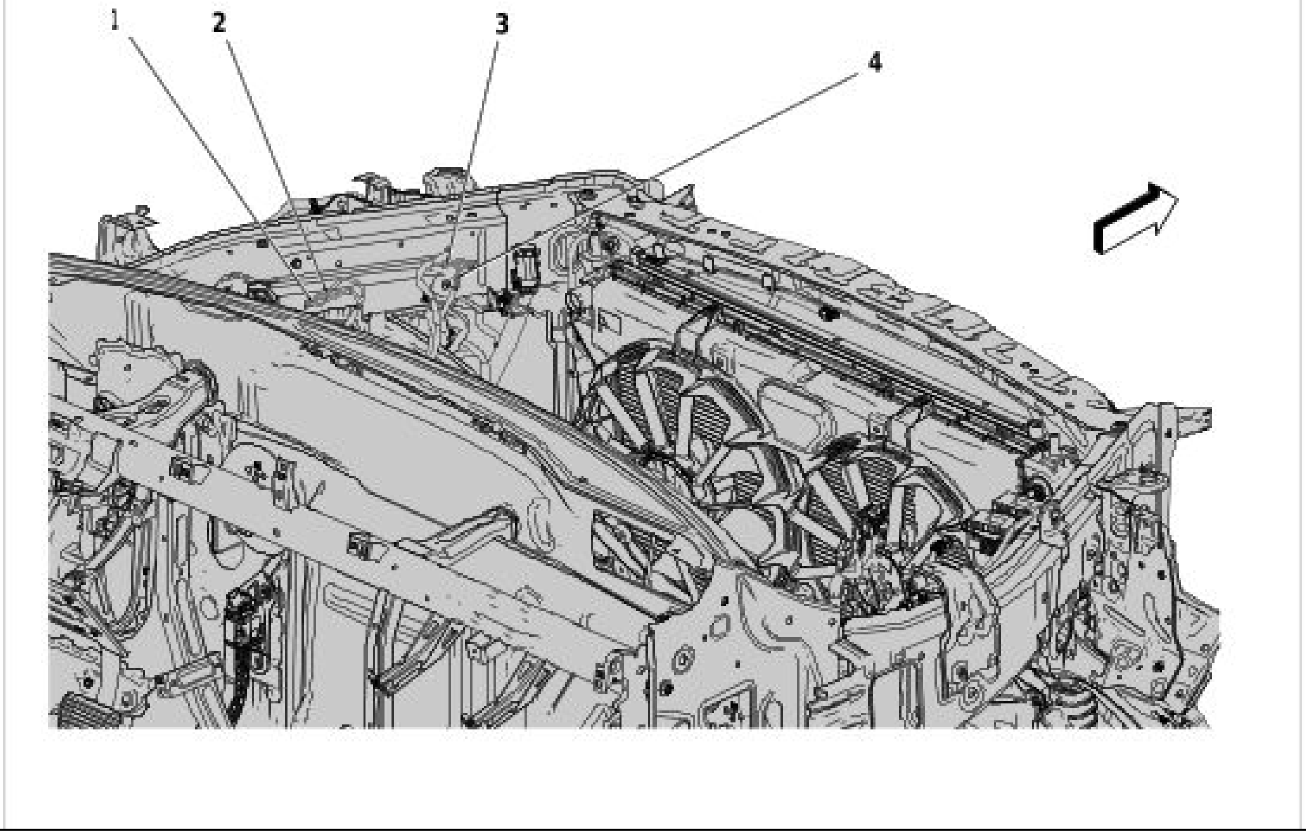
(14) M135 Differential Lock Motor (G96)

(15) B11RR Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Right (F47)

(16) Q37RRB Rear Shock Absorber Actuator - Right (Z95)

(17) K5 Automatic Level Control Module (F47)

### G100, G101A, G101B, and G103



6682039

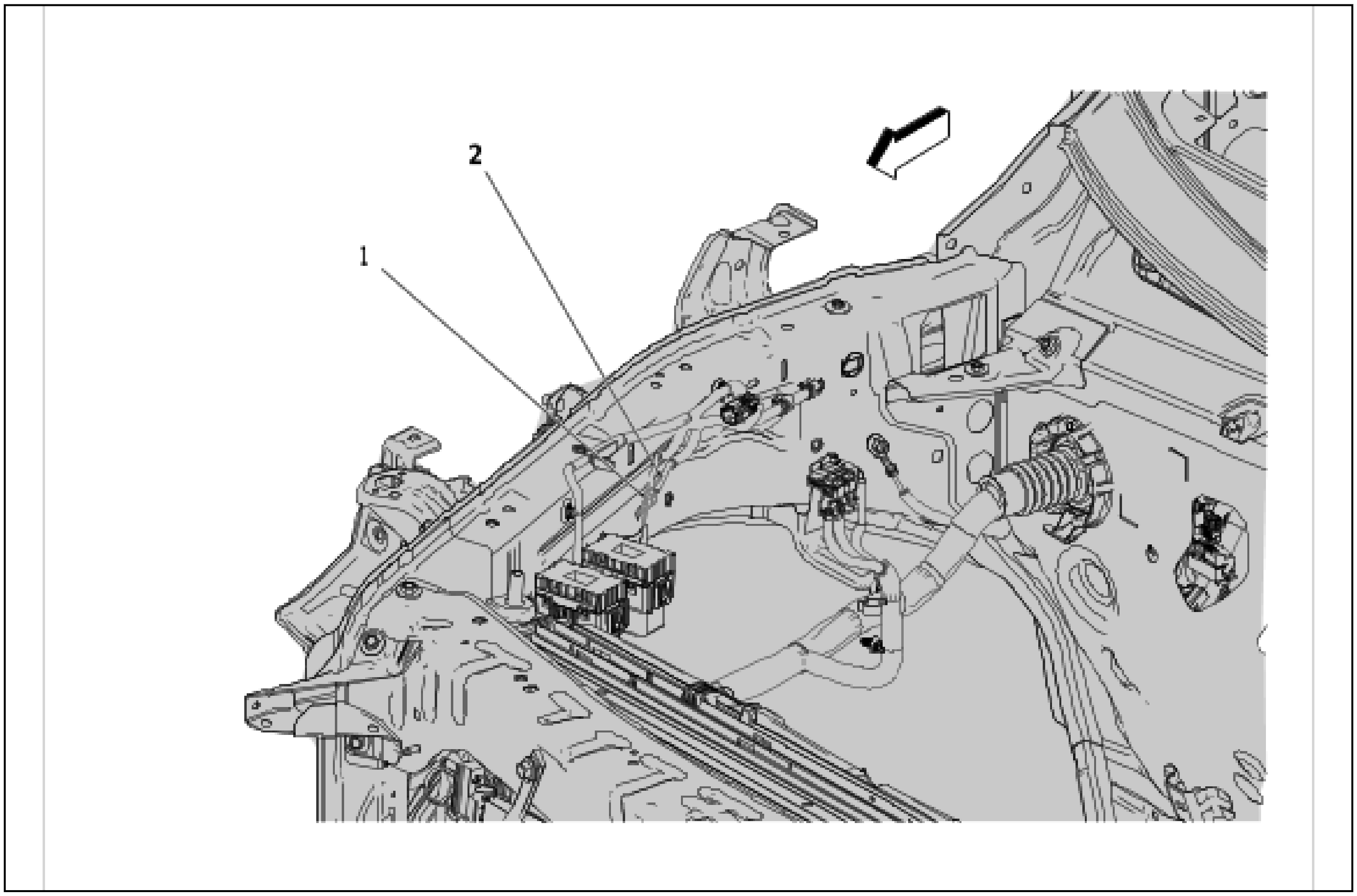
**Items**

(1) G101A Body Wiring Harness

(2) G101B Body Wiring Harness

| Items |
|---|
| (3) G103 Body Wiring Harness |
| (4) G100 Body Wiring Harness |

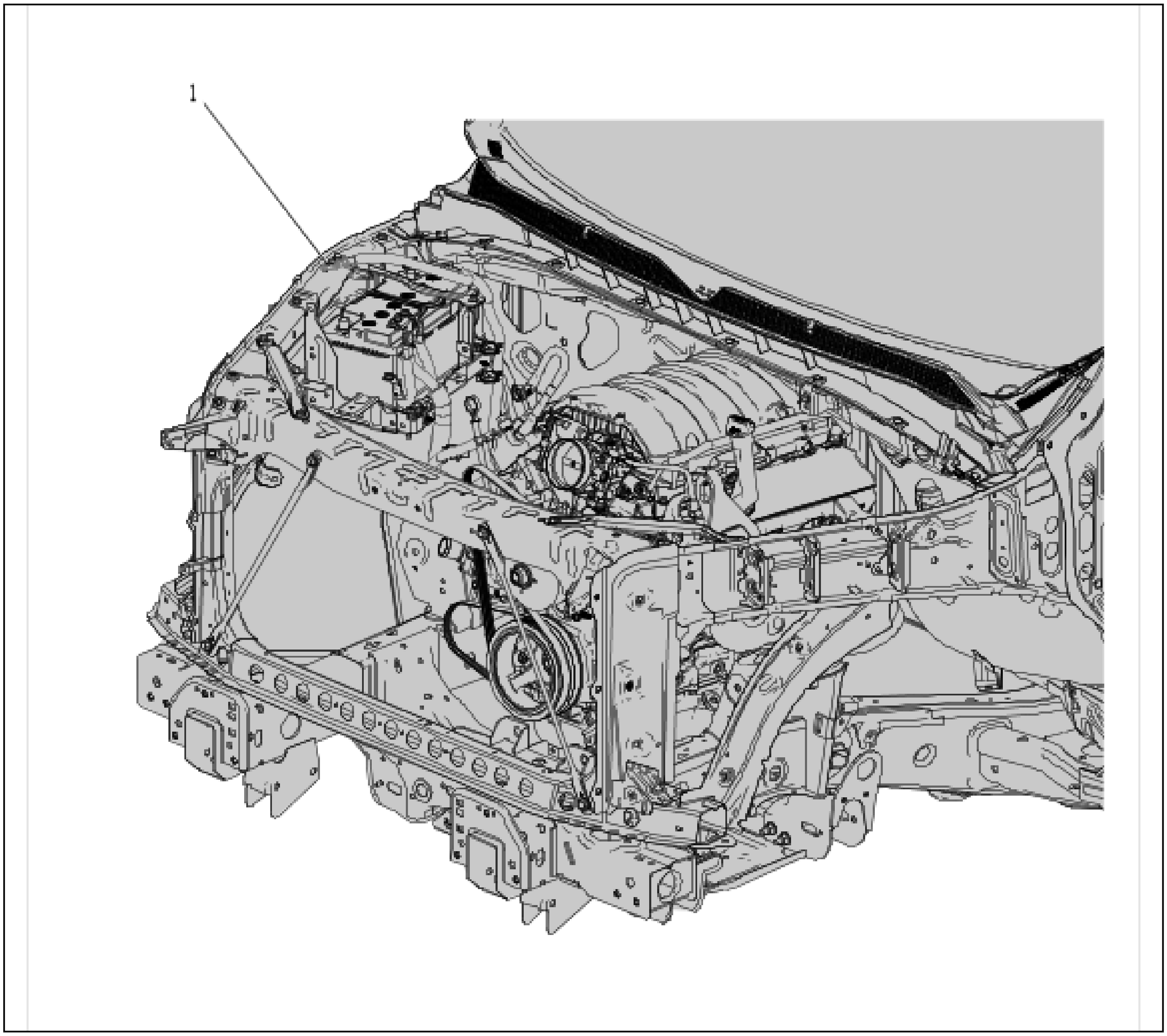
### G102A and G102B



6682040

| Items |
|---|
| (1) G102A Body Wiring Harness |
| (2) G102B Body Wiring Harness |

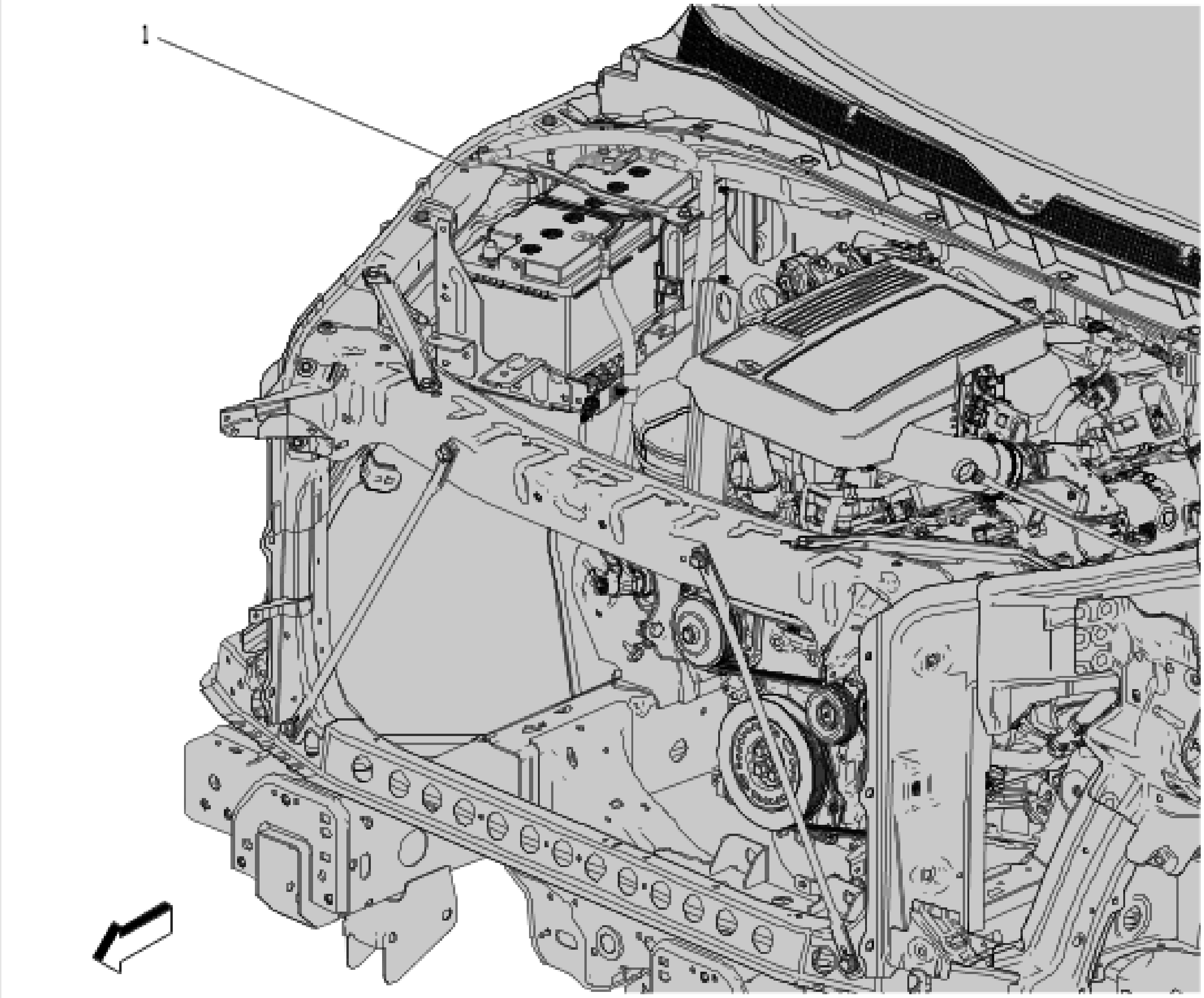
## G104 (L84 / L87)



6666123

| Items |
|---|
| (1) G104 Starter Solenoid Cable |

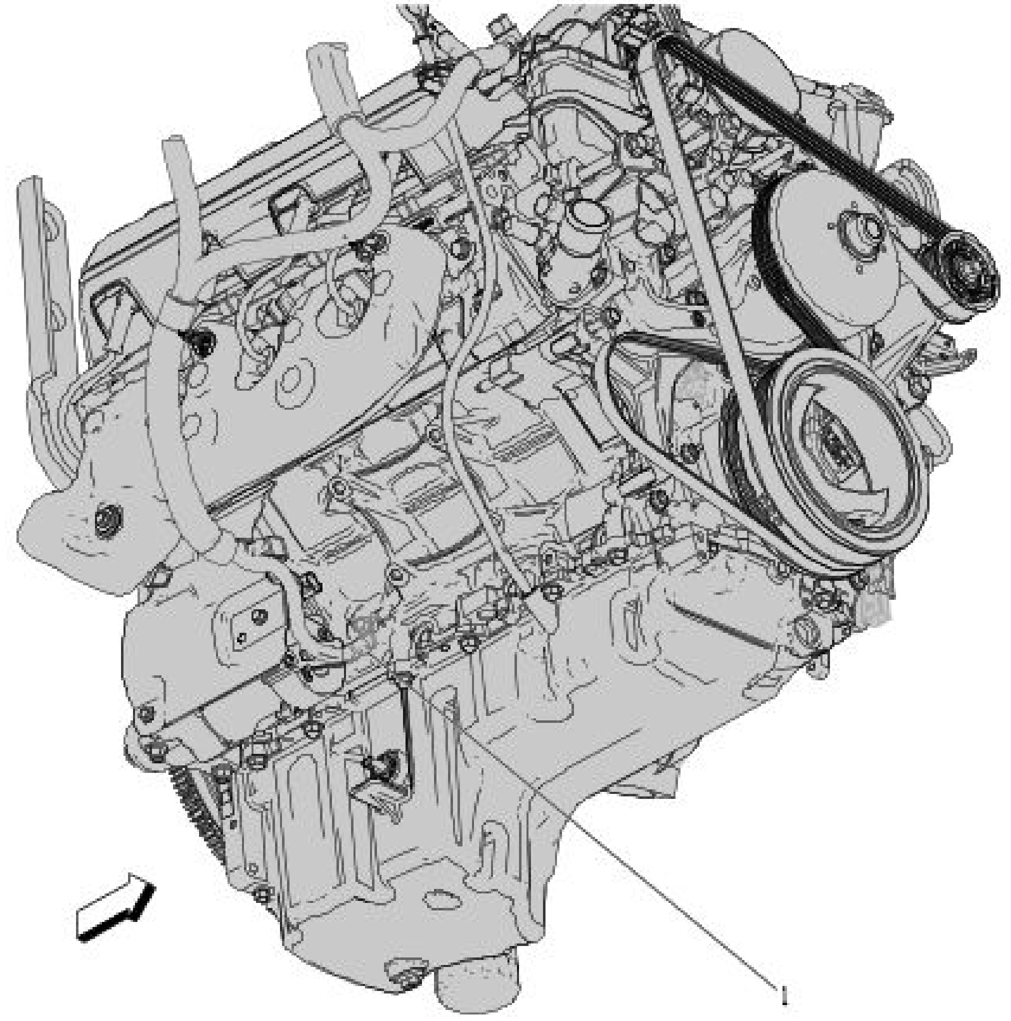
## G104 (LZ0)



6666124

| Items |
|---|
| (1) G104 Starter Solenoid Cable |

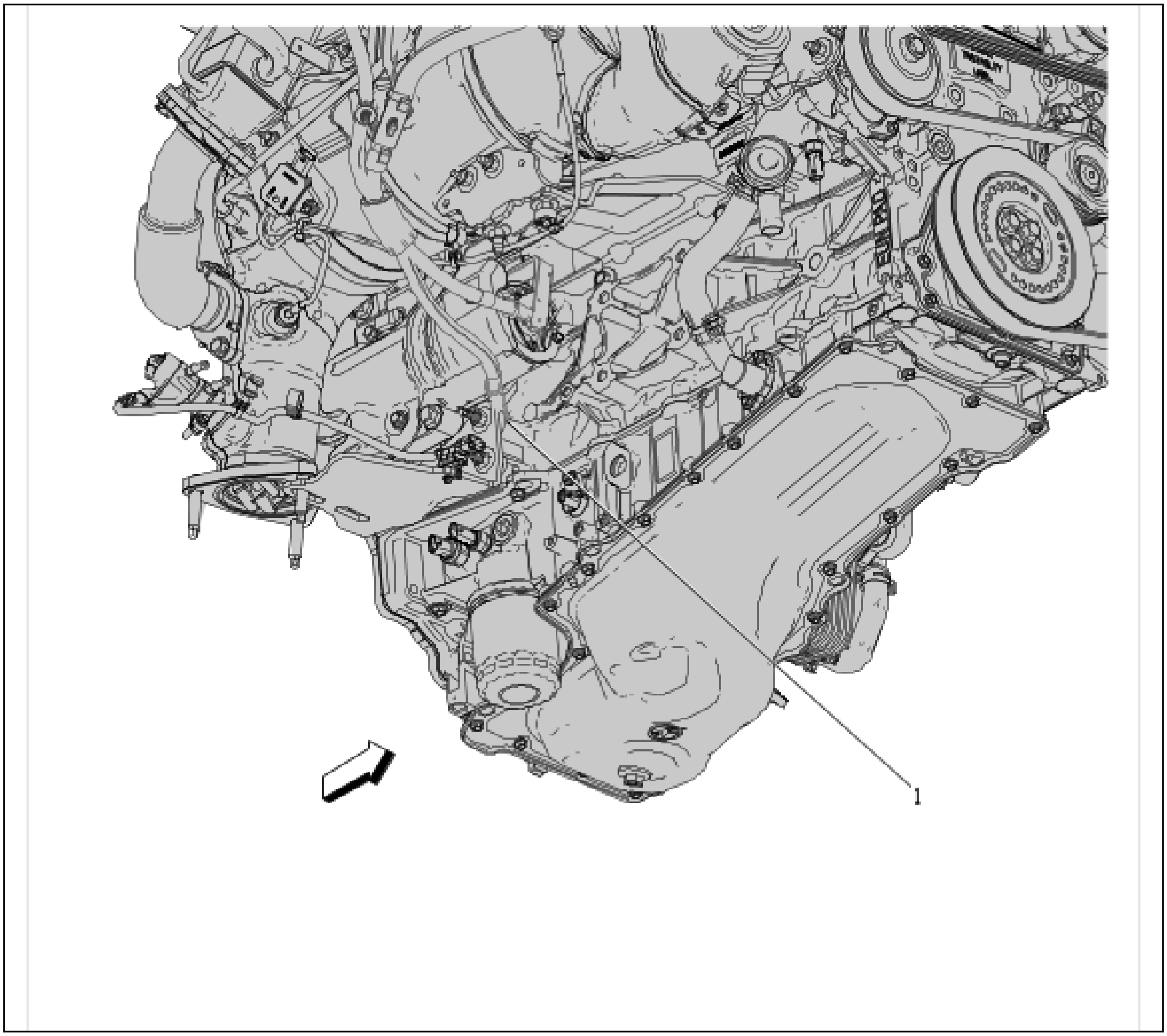
## G130 (L84 / L87)



6666125

| Items |
|---|
| (1) G130 Starter Solenoid Cable |

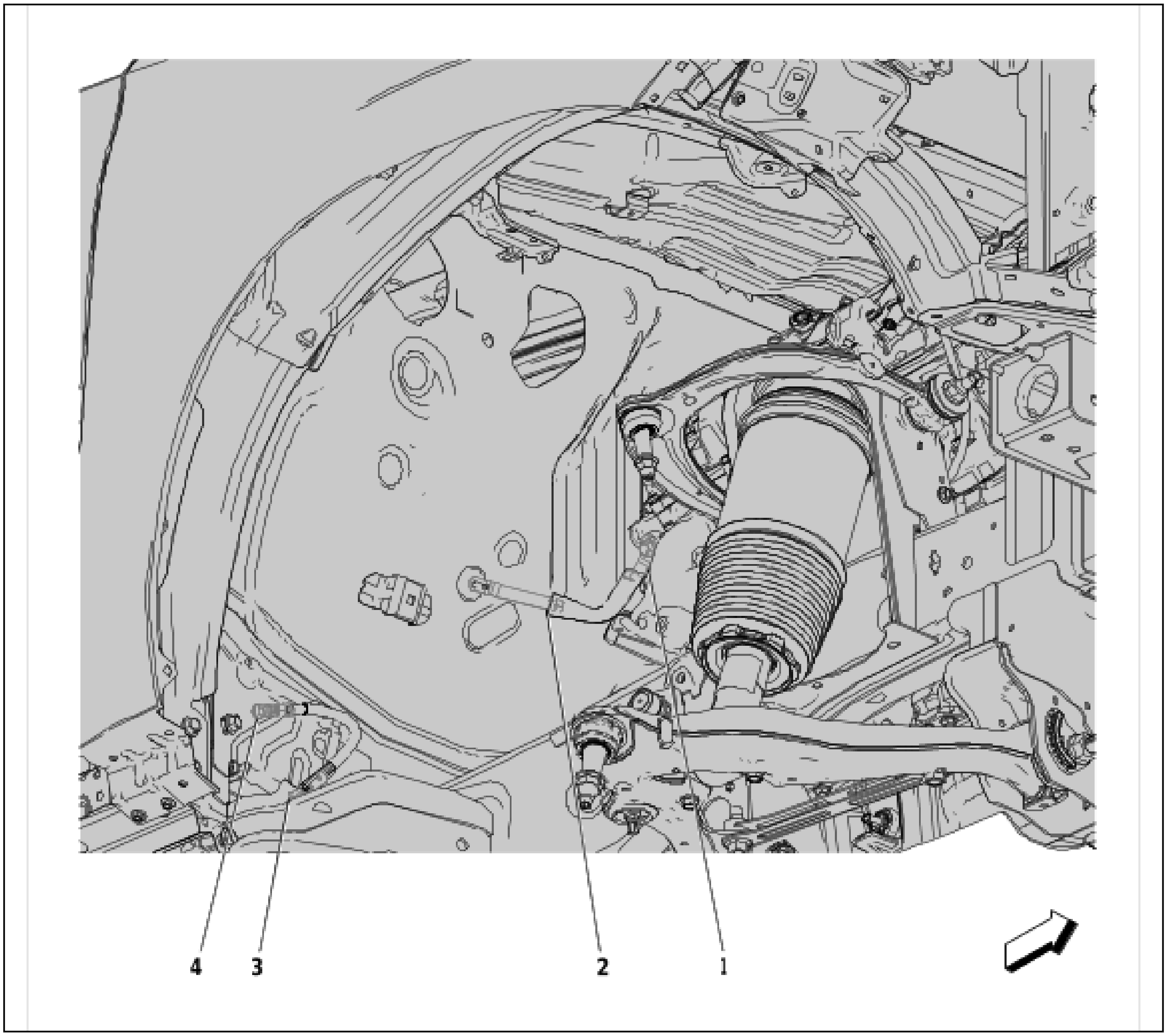
## G130 (LZ0)



6666126

| Items |
|---|
| (1) G130 Starter Solenoid Cable |

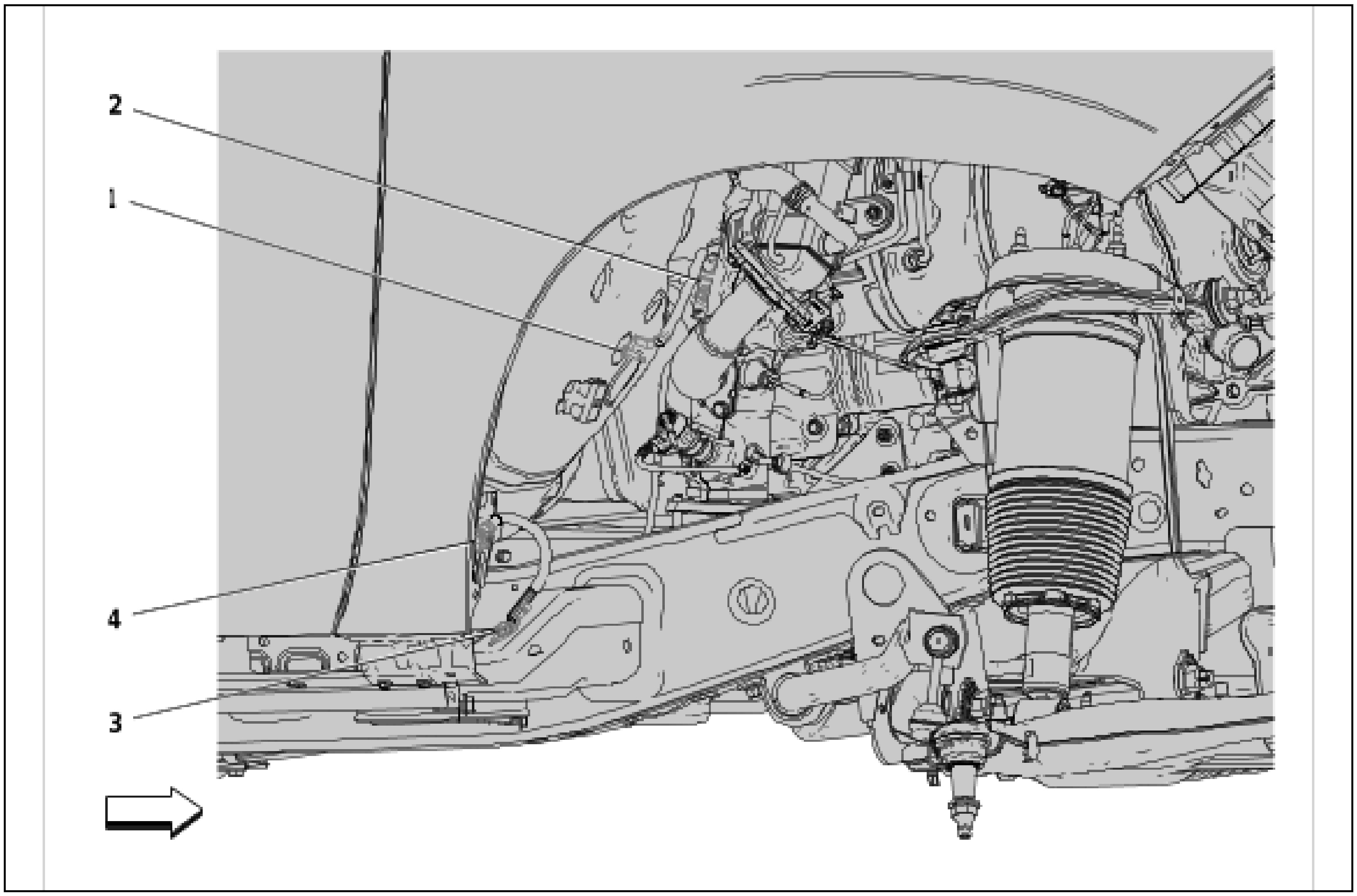
## G131, G132, G133, and G134 (L84 / L87)



6682041

| Items |
|---|
| (1) G133 Ground Strap |
| (2) G131 Ground Strap |
| (3) G132 Ground Strap |
| (4) G134 Ground Strap |

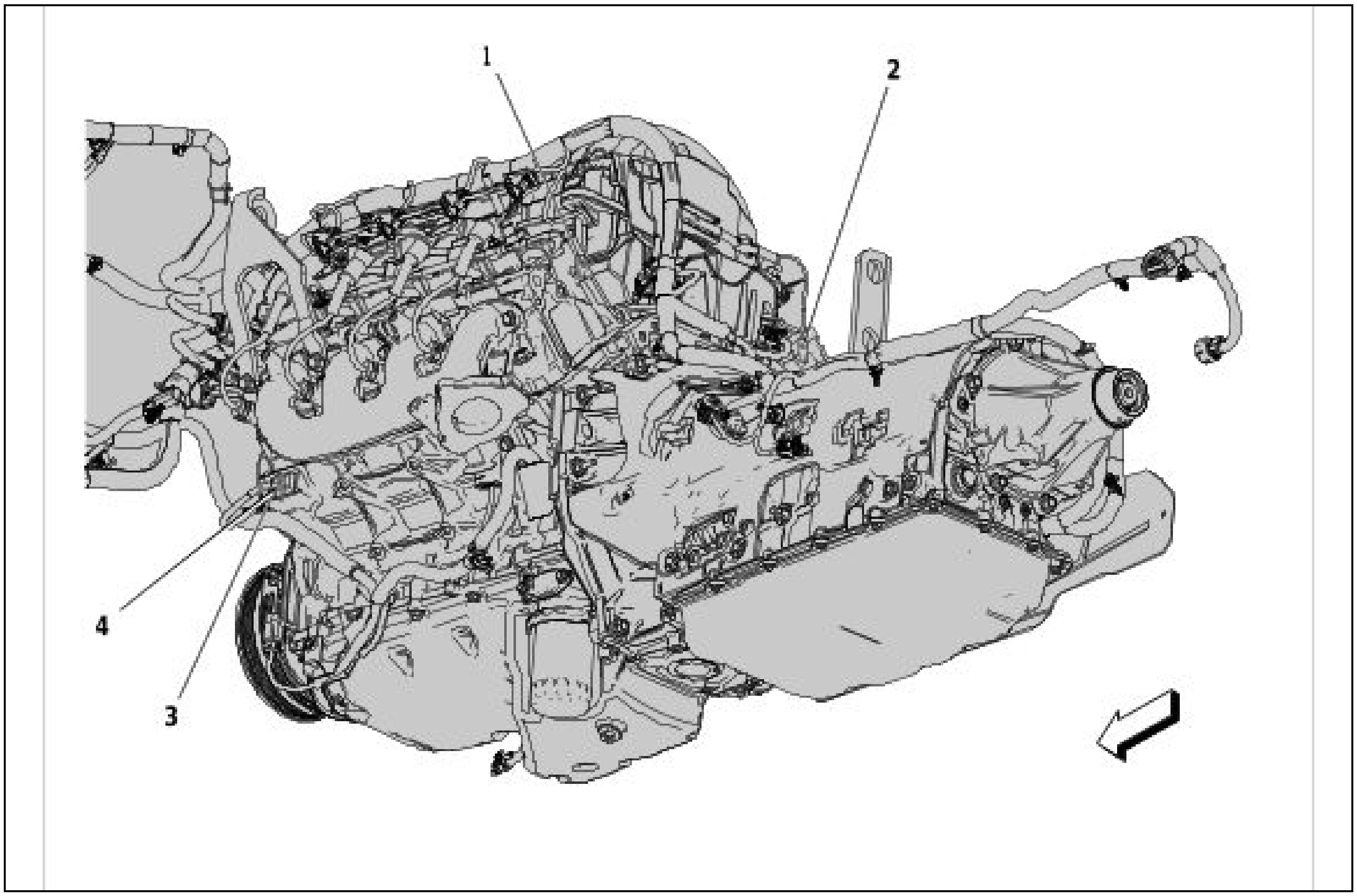
### G131, G132, G133, and G134 (LZ0)



6682042

| Items |
|---|
| (1) G131 Ground Strap |
| (2) G133 Ground Strap |
| (3) G132 Ground Strap |
| (4) G134 Ground Strap |

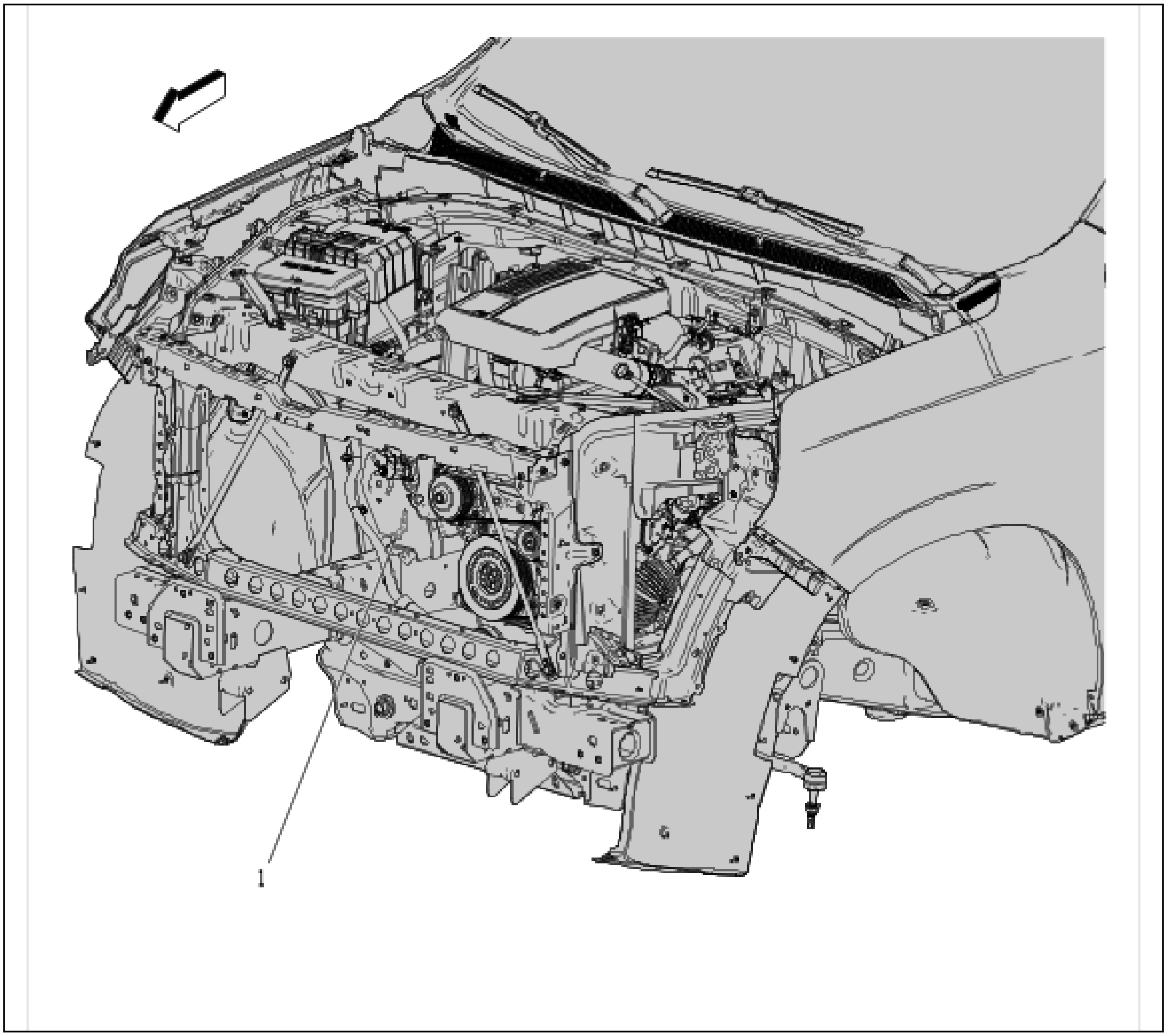
## G175, G176A, G177A, and G177D (L84 / L87)



6676701

| Items |
|---|
| (1) G175 Engine Wiring Harness (L84 / L87) |
| (2) G176A Engine Wiring Harness (L84 / L87) |
| (3) G177A Engine Wiring Harness (L84 / L87) |
| (4) G177D Engine Wiring Harness (L84 / L87) |

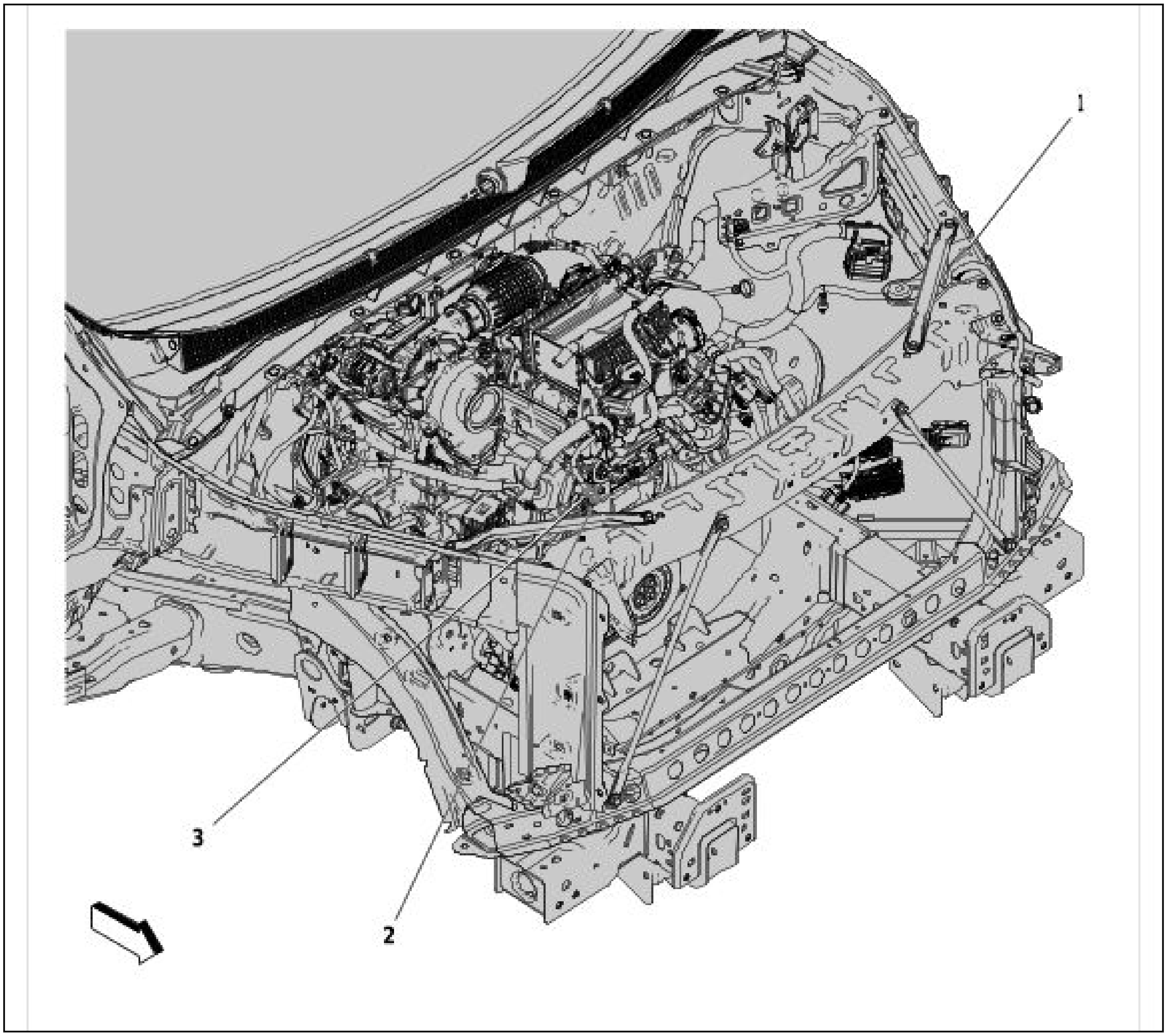
## G176B



6678289

| Items |
|---|
| (1) G176B Power Steering Wiring Harness |

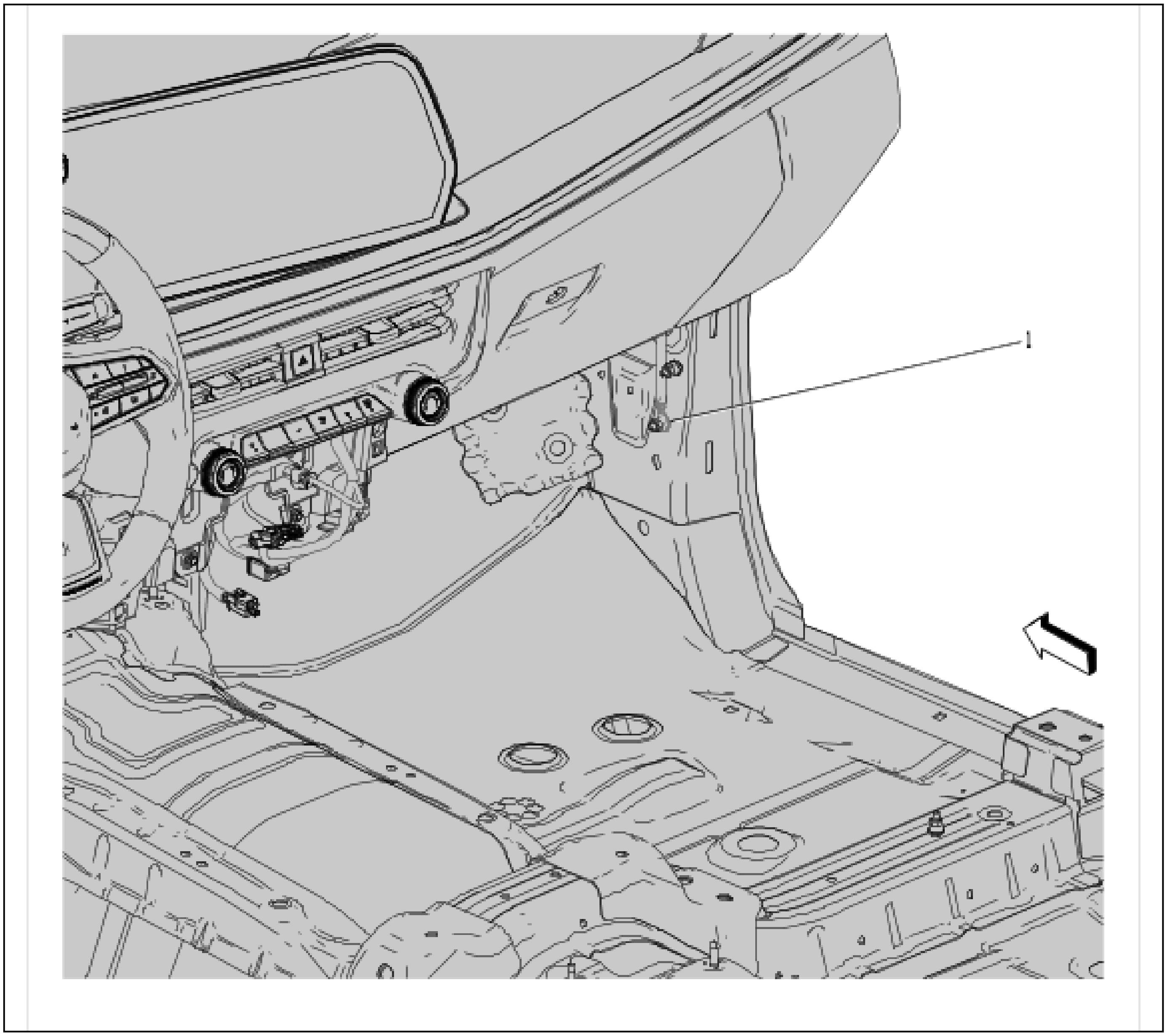
## G176C, G178A, and G178B (LZ0)



6676702

| Items |
|---|
| (1) G176C Engine Wiring Harness (LZ0) |
| (2) G178B Engine Wiring Harness (LZ0) |
| (3) G178A Engine Wiring Harness (LZ0) |

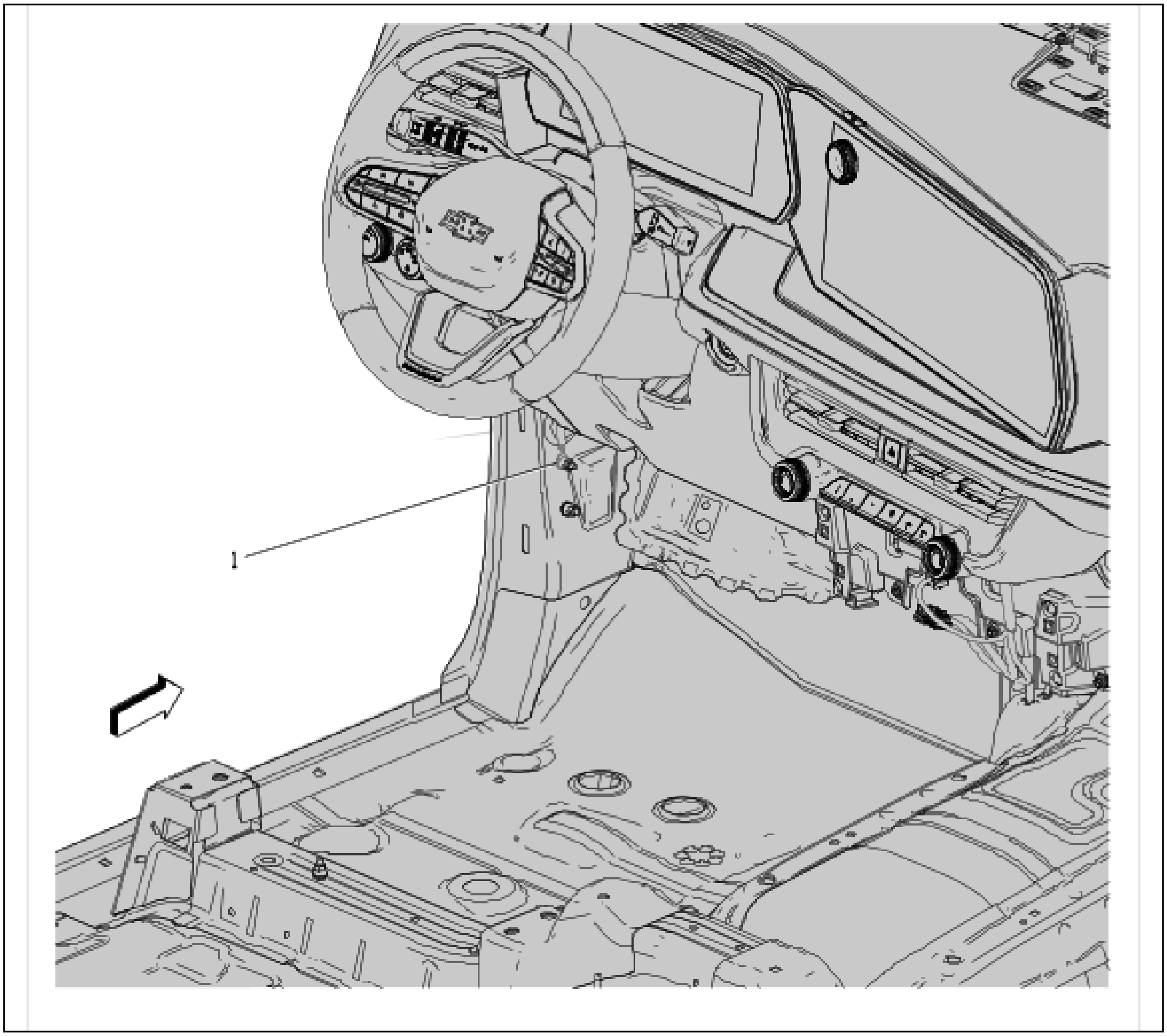
## G200



6666255

| Items |
|---|
| (1) G200 Instrument Panel Wiring Harness |

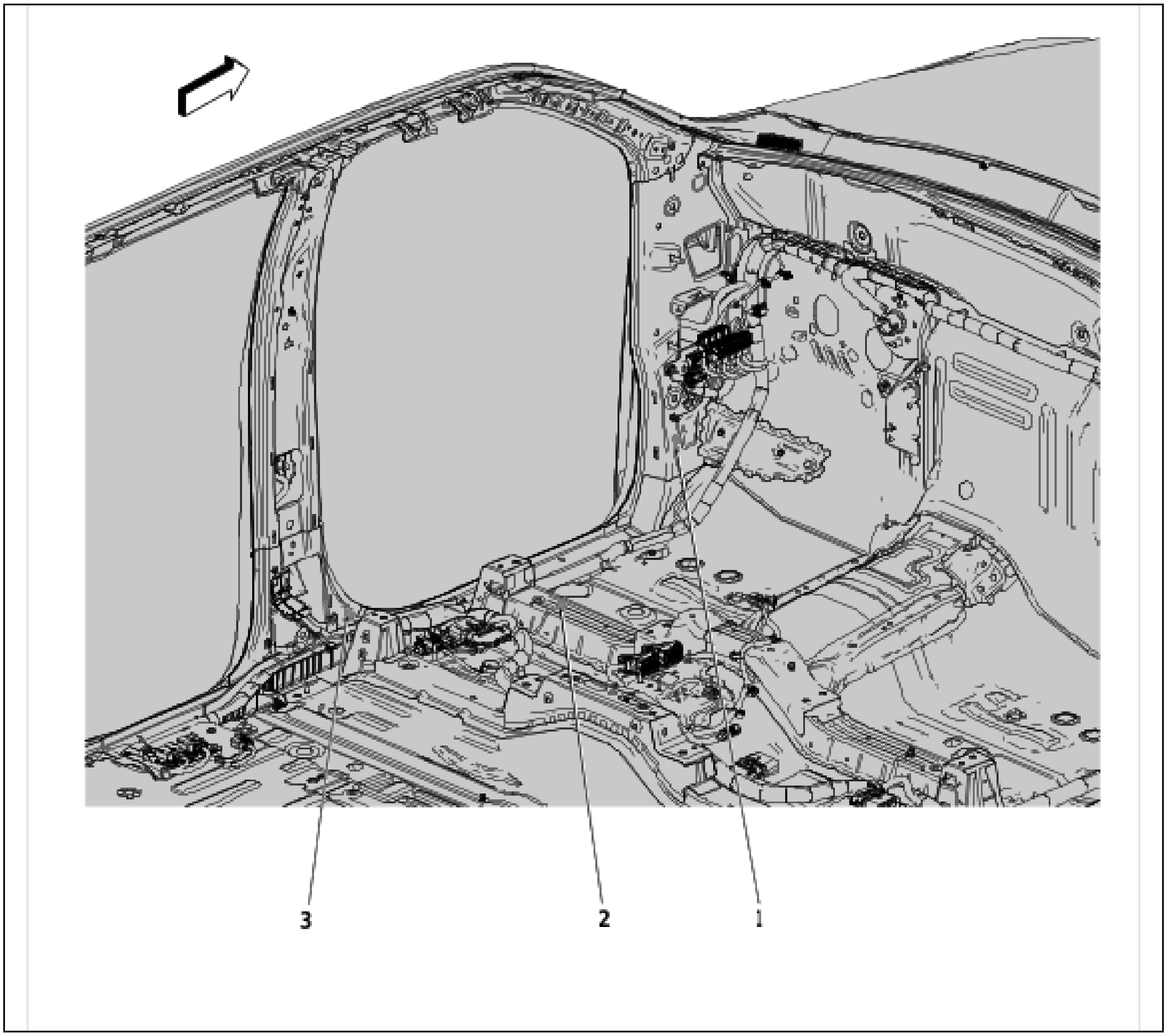
## G201A



6666256

| Items |
|---|
| (1) G201A Instrument Panel Wiring Harness |

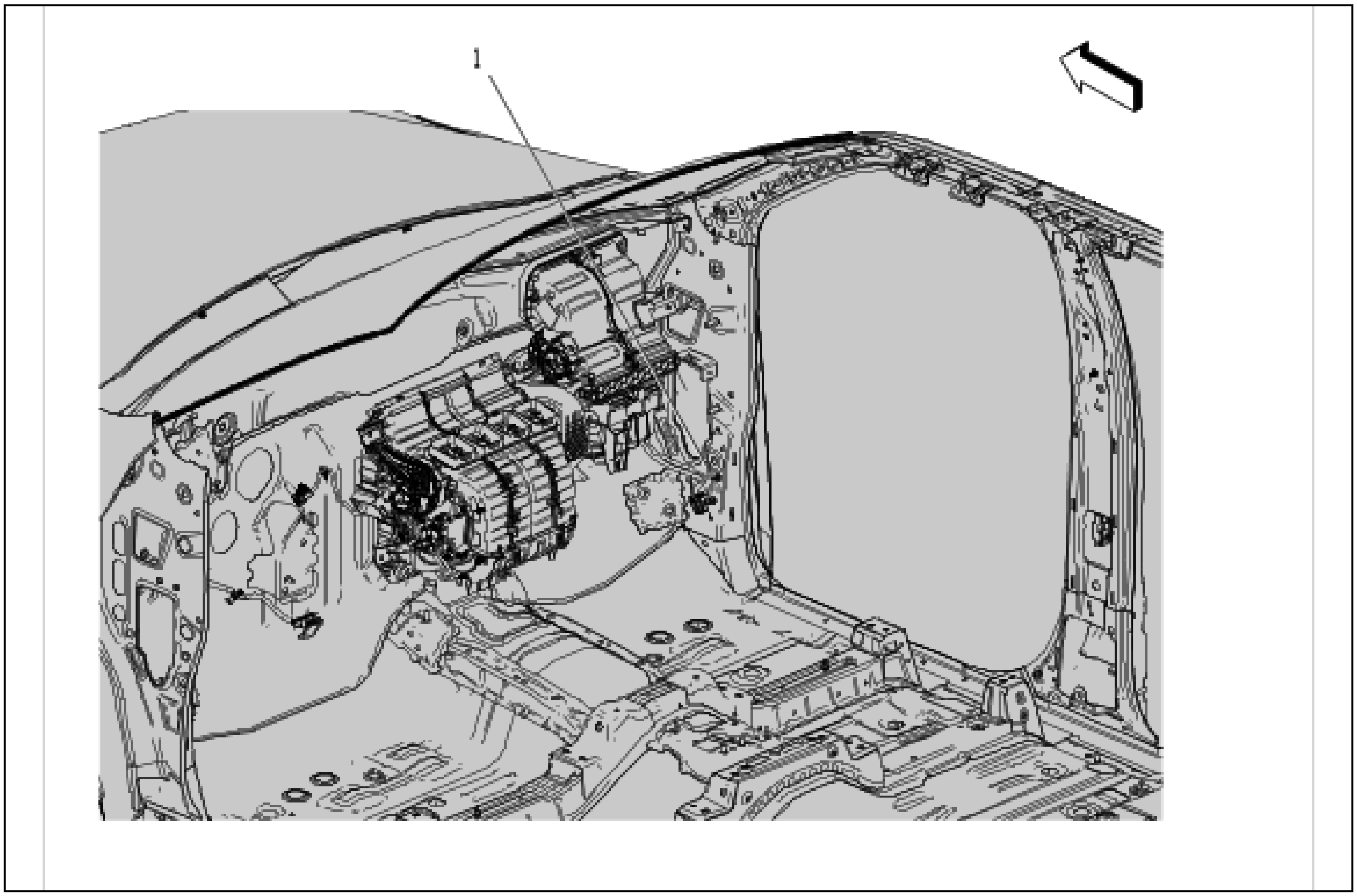
## G201B, G301, and G303



6678510

| Items |
|---|
| (1) G201B Body Wiring Harness |
| (2) G303 Body Wiring Harness |
| (3) G301 Body Wiring Harness |

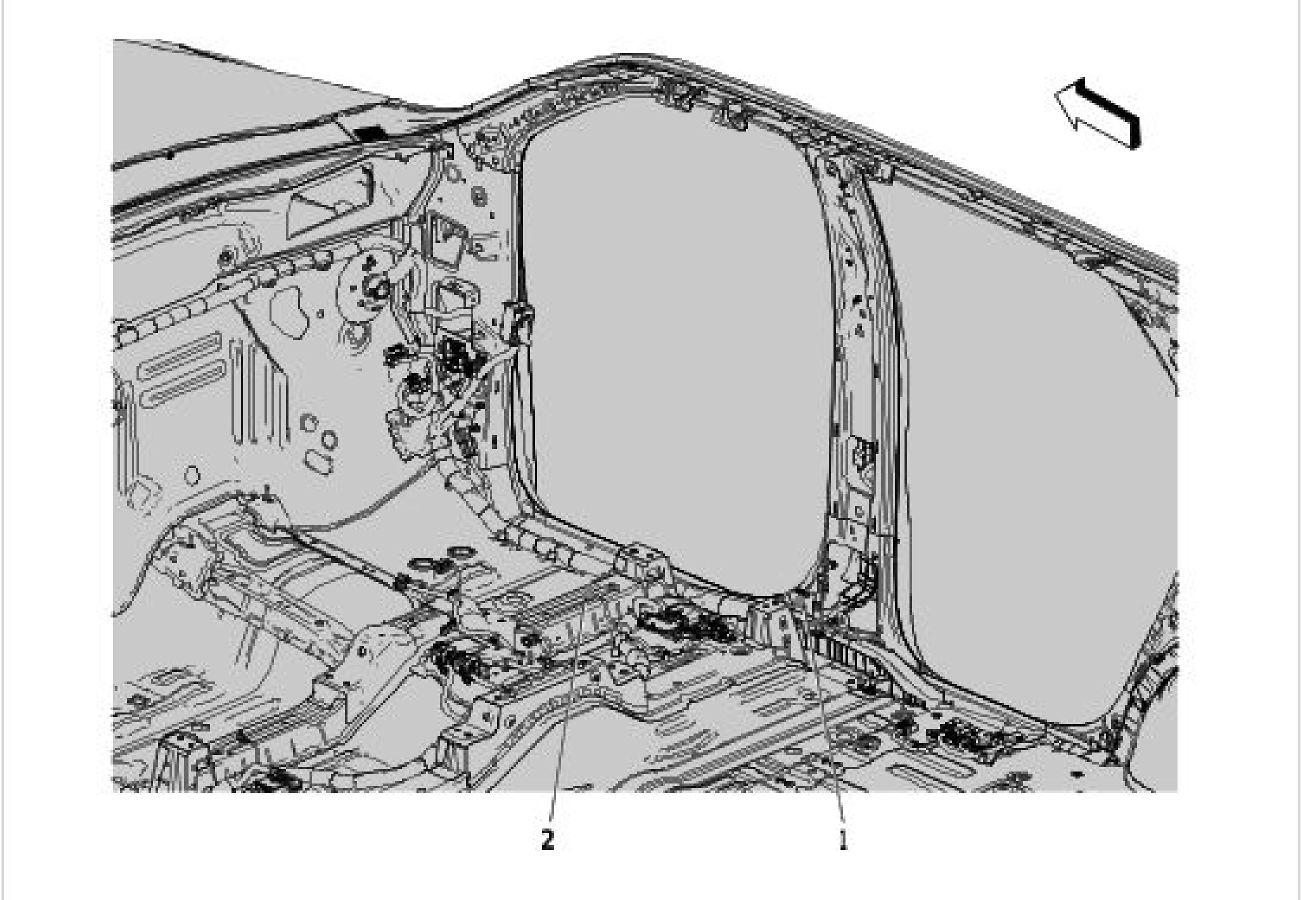
## G202 (C3A)



6678290

| Items |
|---|
| (1) G202 Auxiliary Heater Harness (C3A) |

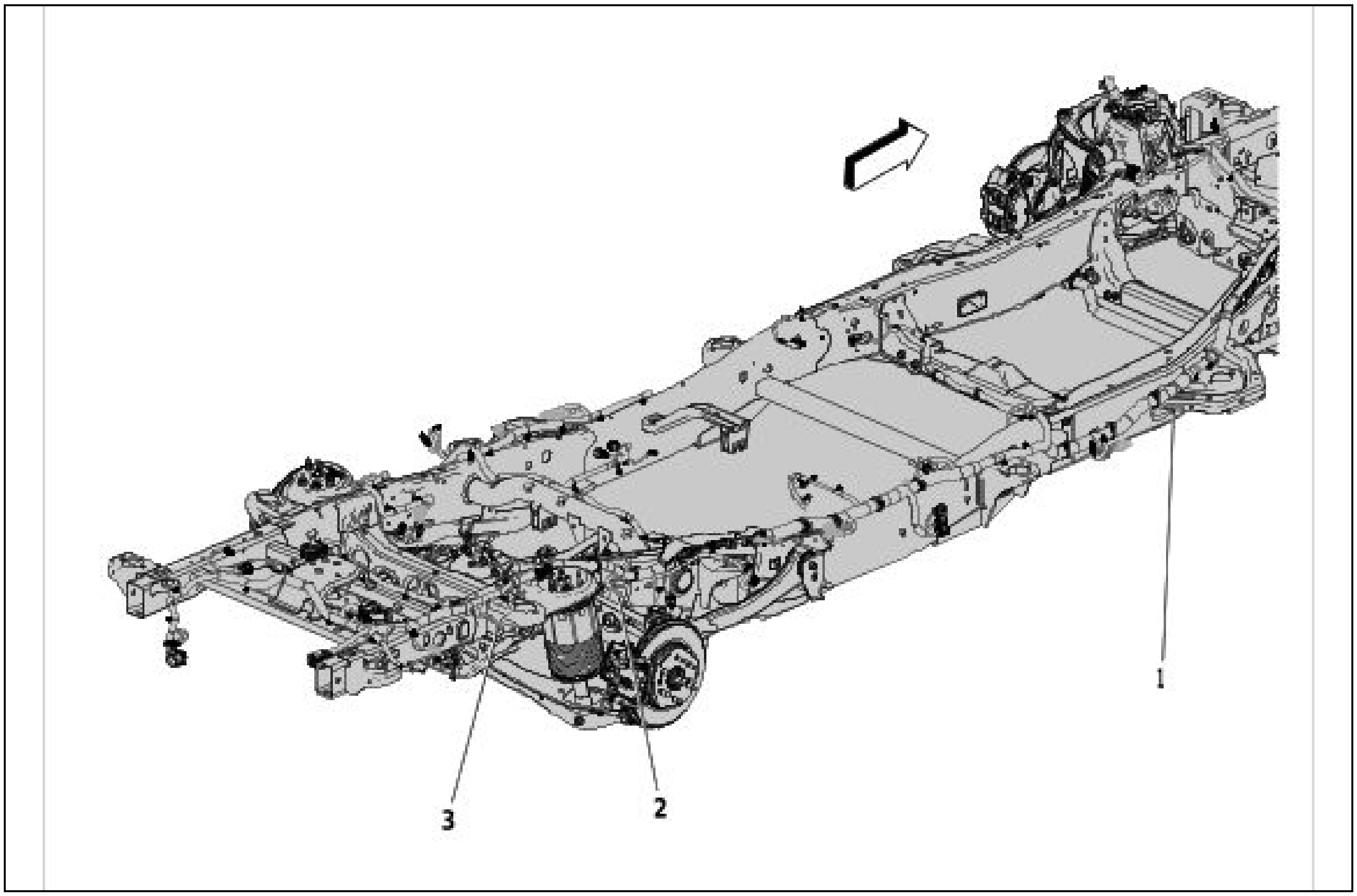
## G300A and G302



6678511

| Items |
|---|
| (1) G300A Body Wiring Harness |
| (2) G302 Body Wiring Harness |

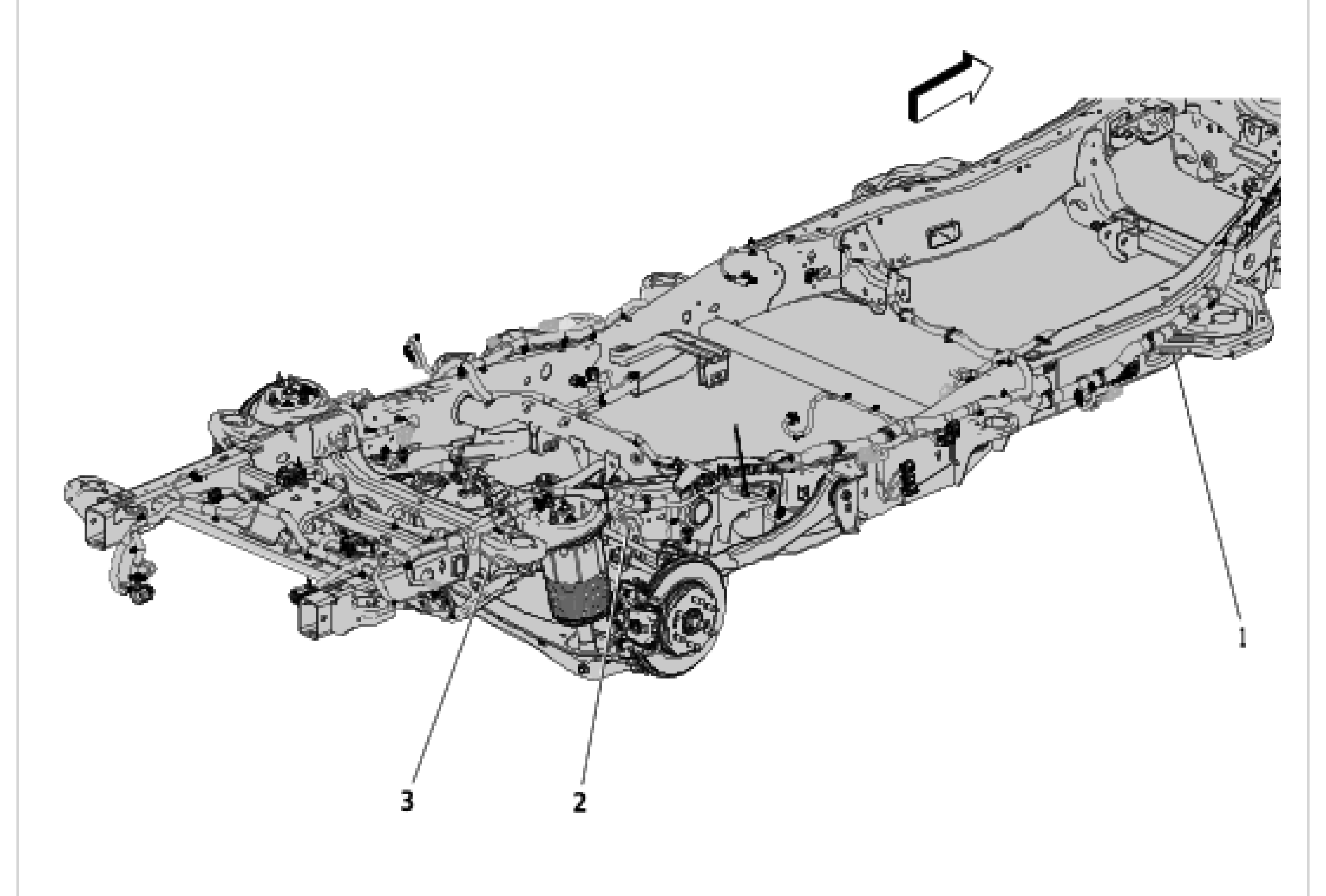
### G402, G404, and G407 (LWB)



6677055

| Items |
|---|
| (1) G402 Chassis Wiring Harness |
| (2) G404 Chassis Wiring Harness |
| (3) G407 Chassis Wiring Harness |

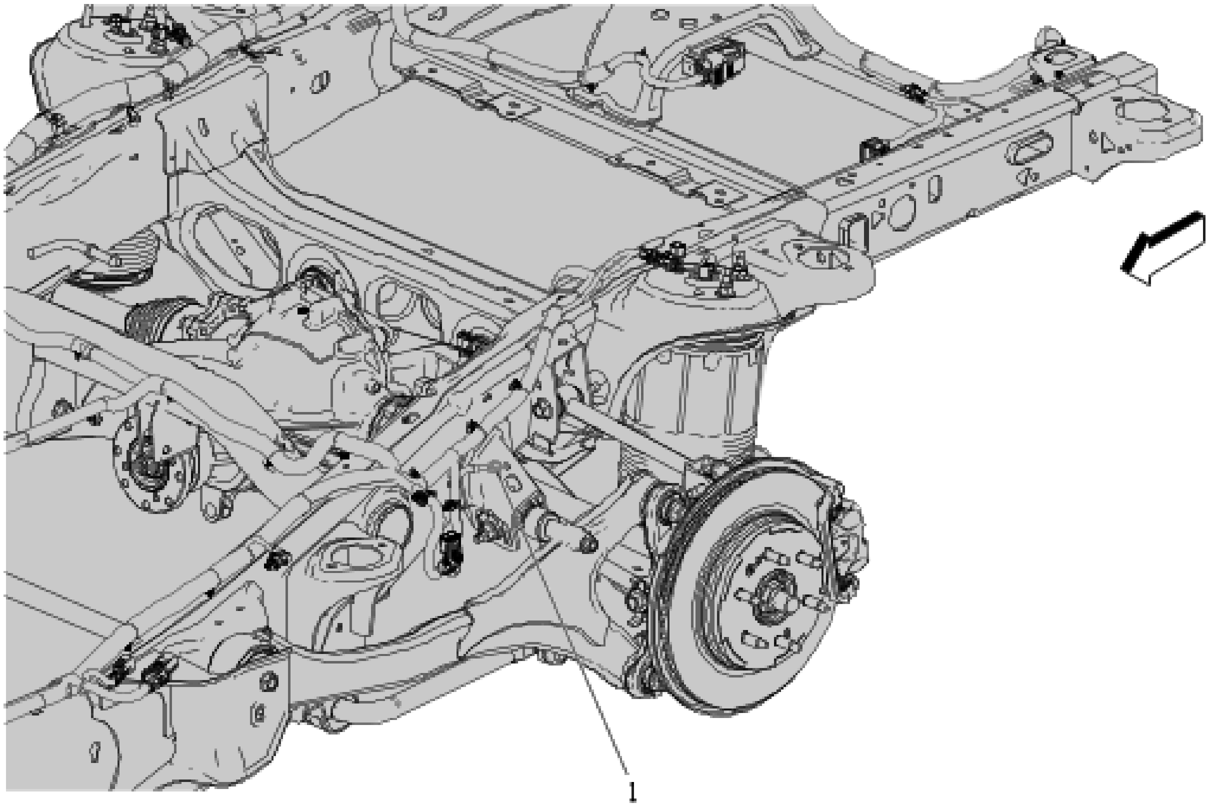
## G402, G404, and G407 (SWB)



6677056

| Items |
|---|
| (1) G402 Chassis Wiring Harness |
| (2) G404 Chassis Wiring Harness |
| (3) G407 Chassis Wiring Harness |

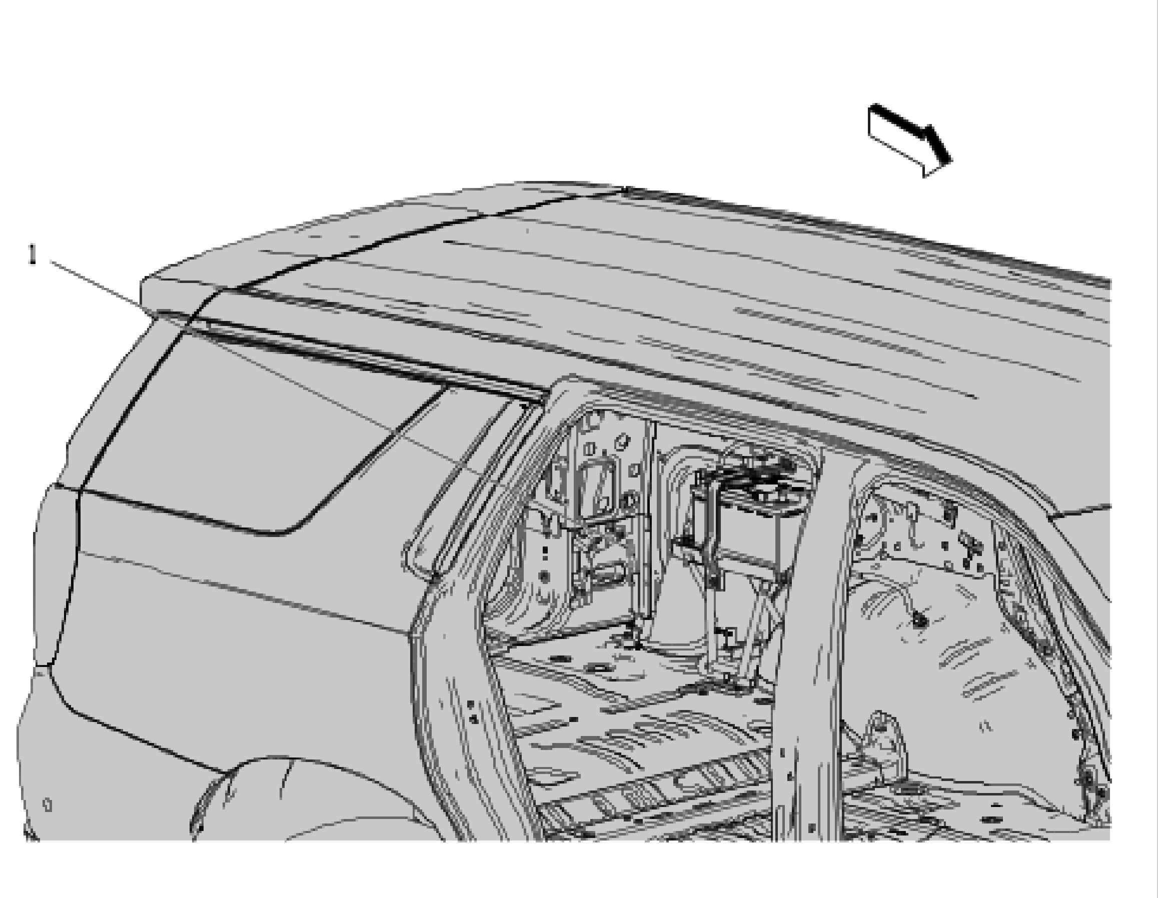
## G405A



6677057

| Items |
|---|
| (1) G405A Chassis Wiring Harness |

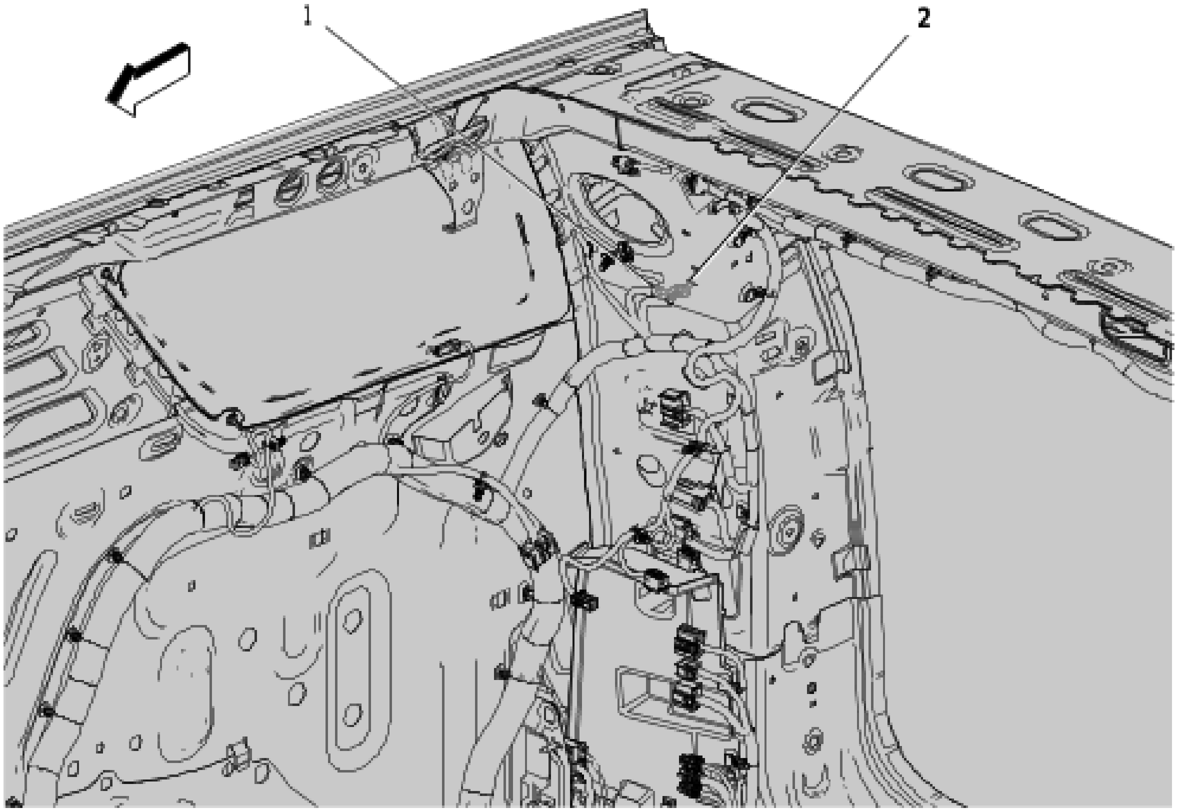
## G405B (5W4 / 9C1)



6678291

| Items |
|---|
| (1) G405B Auxiliary Battery Ground Harness (5W4 / 9C1) |

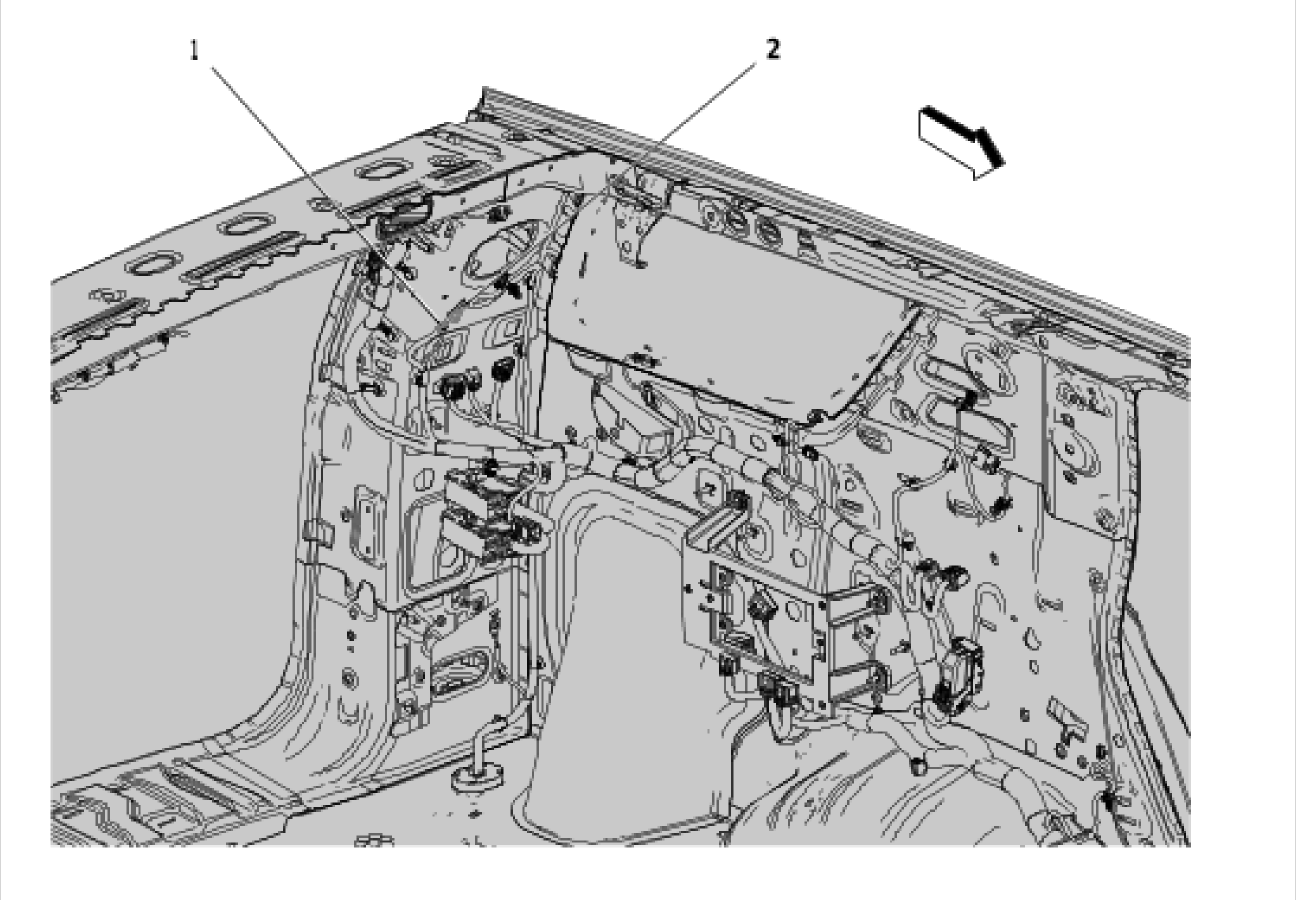
## G408A and G408B



6678512

| Items |
|---|
| (1) G408B Body Wiring Harness |
| (2) G408A Body Wiring Harness |

## G409A and G409C



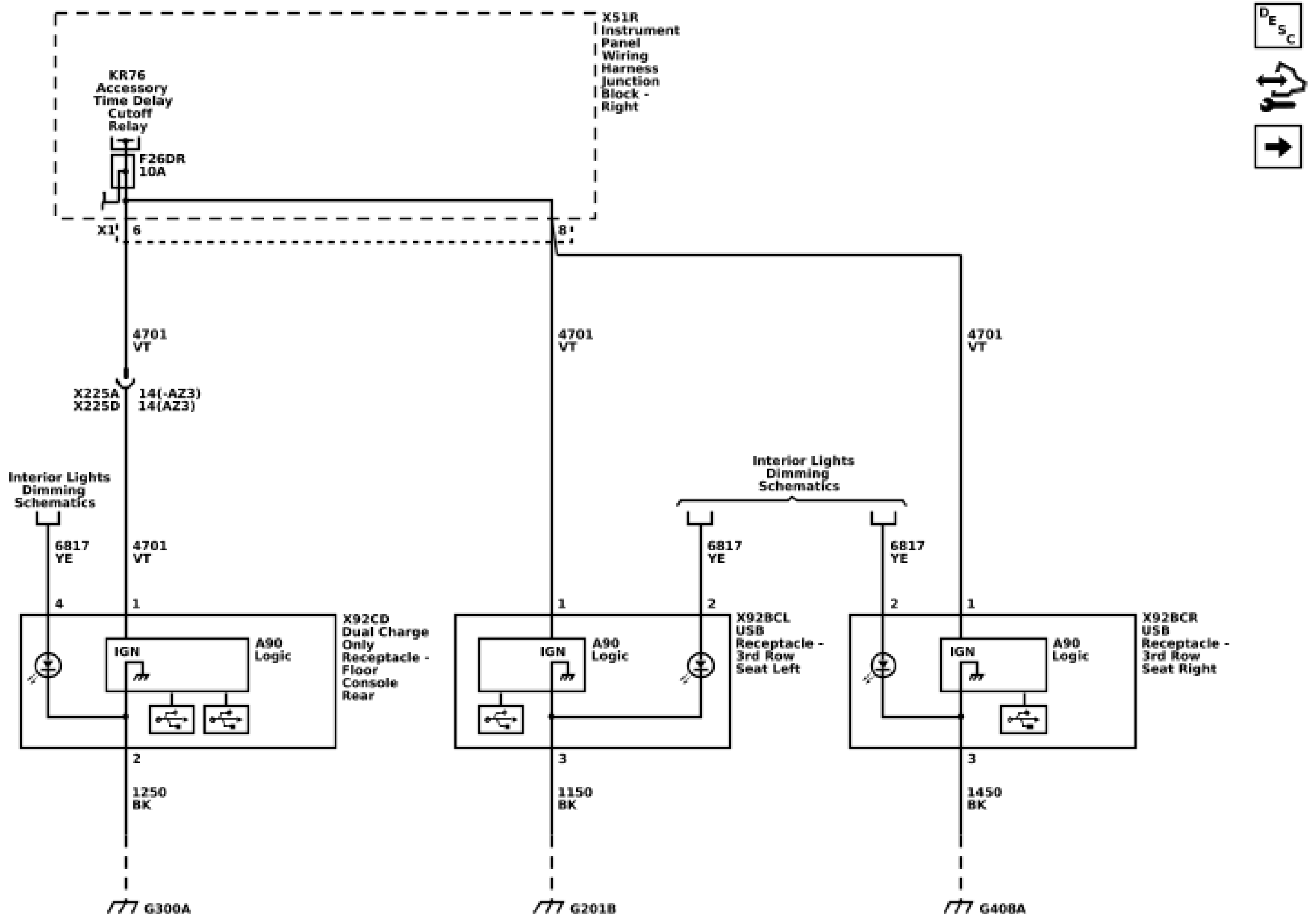
6678513

| Items |
|---|
| (1) G409A Body Wiring Harness |
| (2) G409C Body Wiring Harness (5W4 / 9C1) |

# Power Outlets

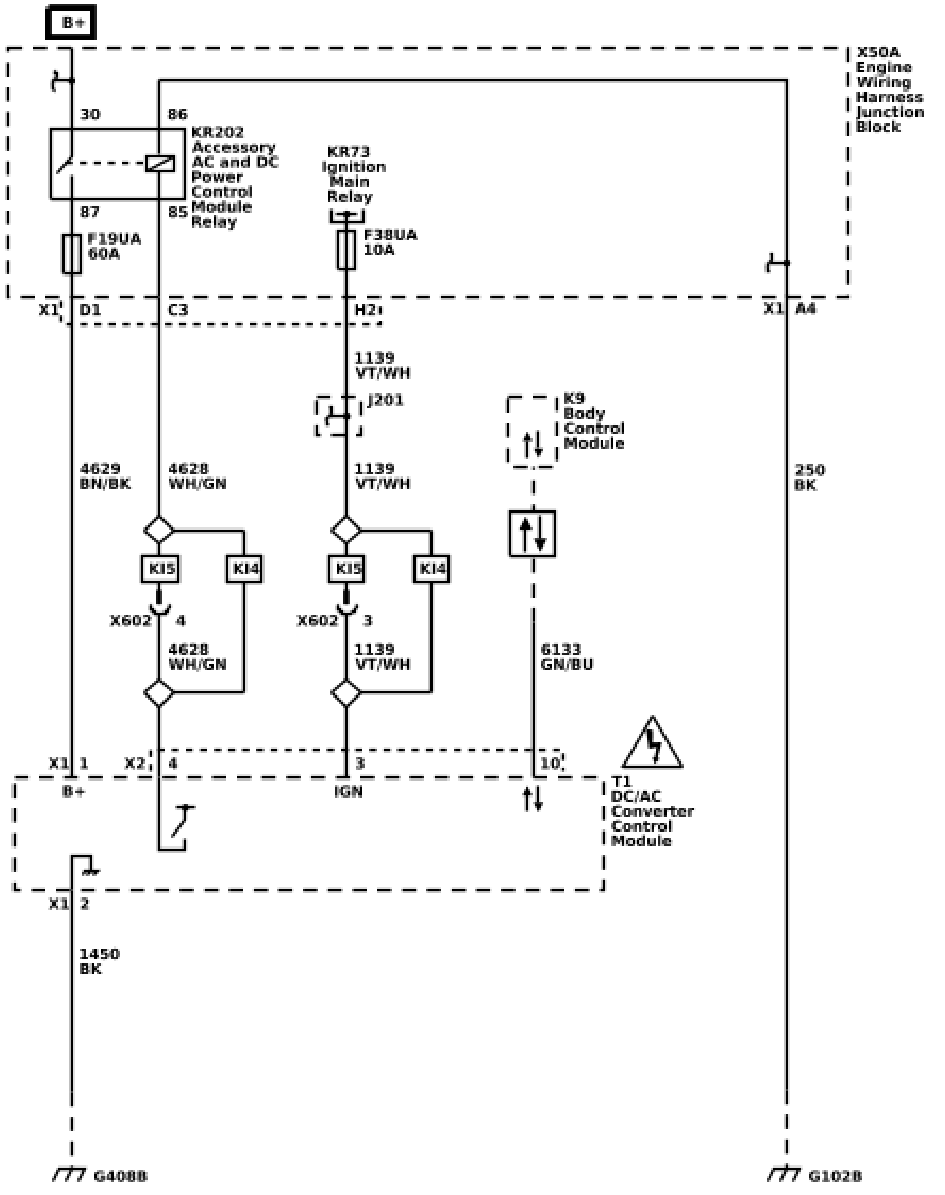
## Schematic and Routing Diagrams

## Cigar Lighter/Power Outlet Schematics (USB Charge Receptacles)


X51R Instrument Panel Wiring Harness Junction Block - Right
KR76 Accessory Time Delay Cutoff Relay
F26DR 10A
X1
6
8
4701 VT
X225A 14(-AZ3)
X225D 14(AZ3)
Interior Lights Dimming Schematics
6817 YE
4701 VT
4
1
IGN
A90 Logic
X92CD Dual Charge Only Receptacle - Floor Console Rear
2
1250 BK
G300A
4701 VT
1
IGN
A90 Logic
2
X92BCL USB Receptacle - 3rd Row Seat Left
3
1150 BK
G201B
Interior Lights Dimming Schematics
6817 YE
6817 YE
4701 VT
2
1
IGN
A90 Logic
X92BCR USB Receptacle - 3rd Row Seat Right
3
1450 BK
G408A

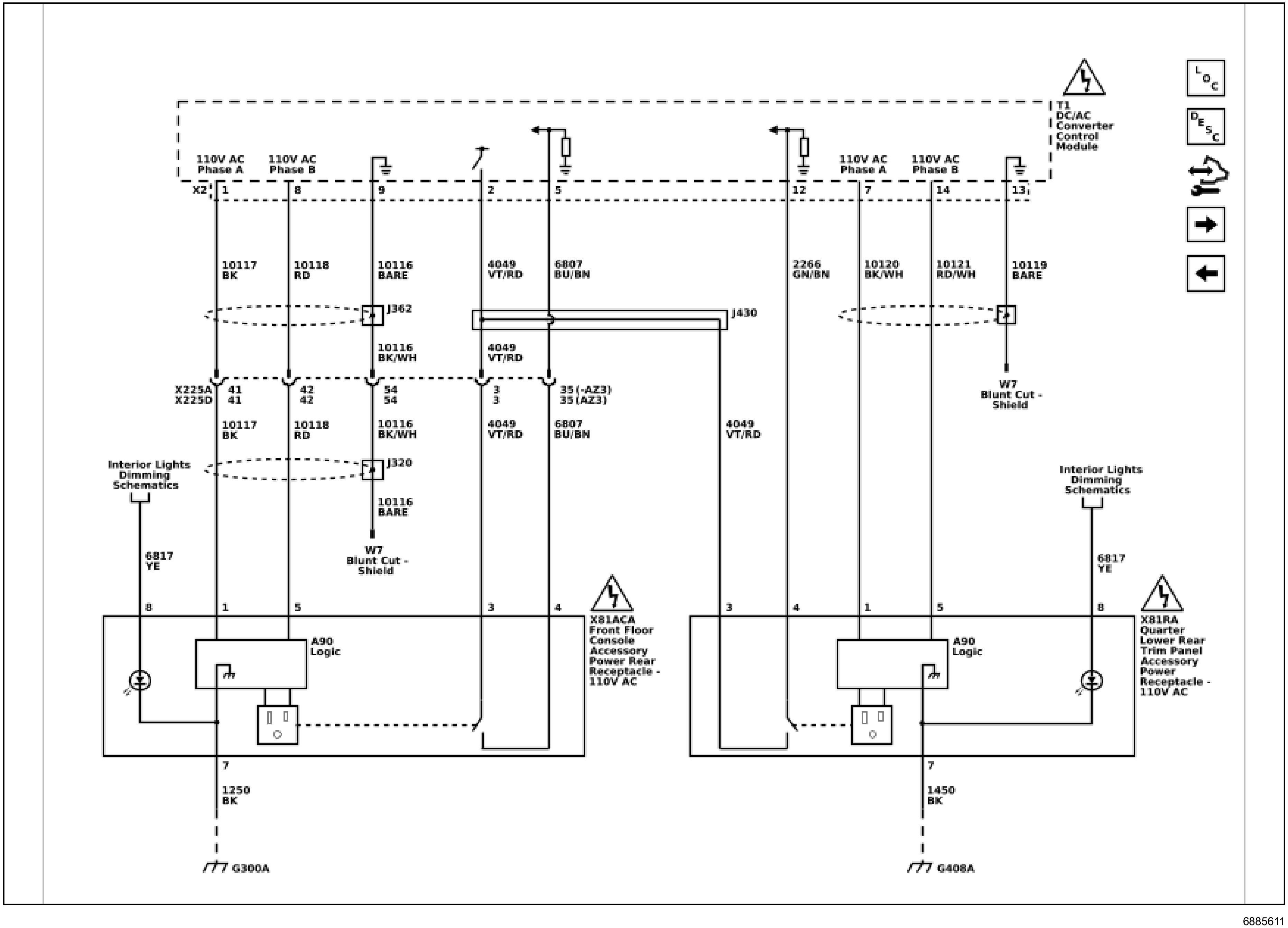
6885609

## Cigar Lighter/Power Outlet Schematics (Inverter Module Power, Ground, Serial Data, and Controls (KI4 / KI5))

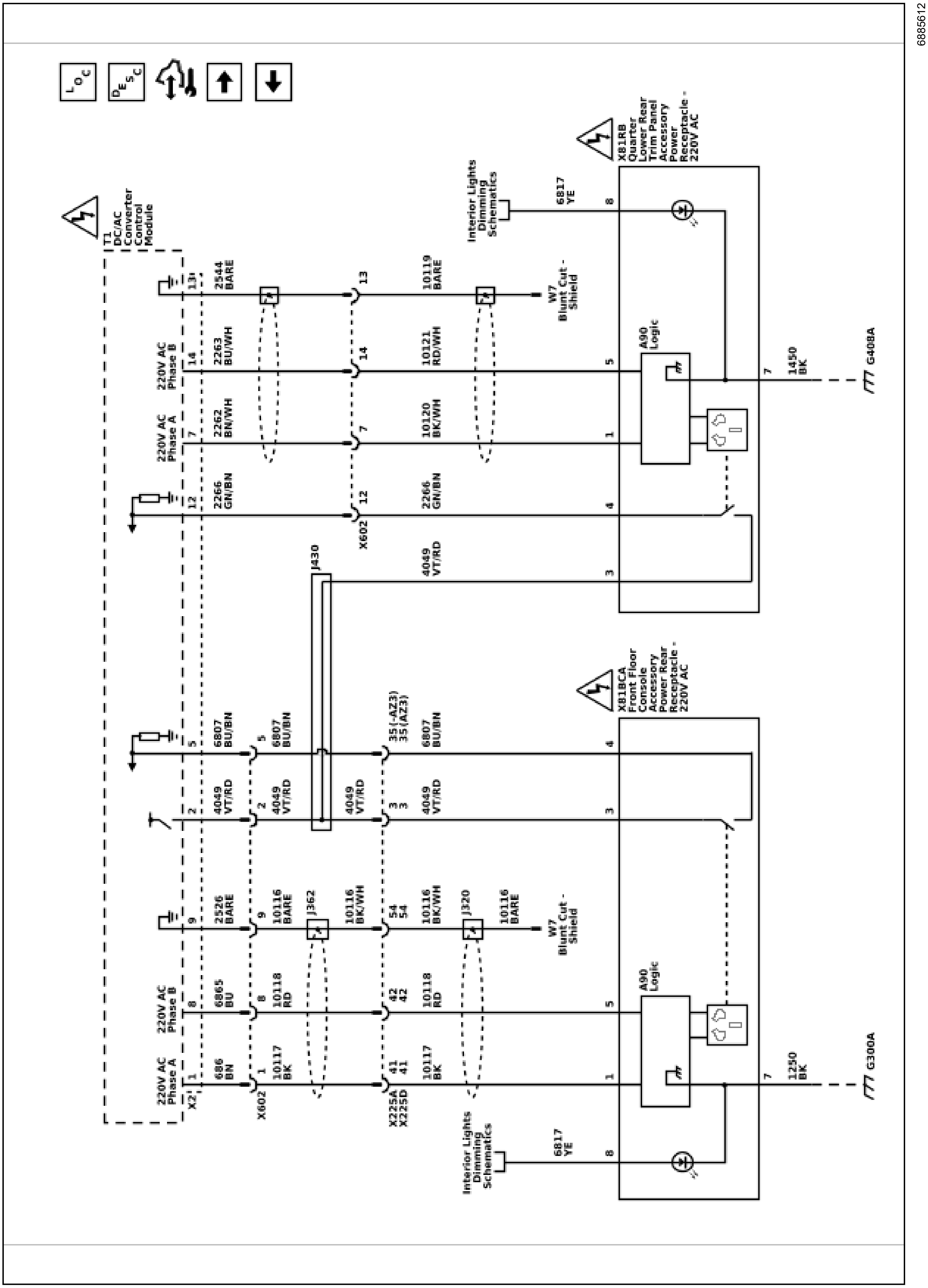

B+
X50A Engine Wiring Harness Junction Block
30
86
KR202 Accessory AC and DC Power Control Module Relay
87
85
KR73 Ignition Main Relay
F19UA 60A
F38UA 10A
X1 D1
C3
H2
X1 A4
1139 VT/WH
J201
K9 Body Control Module
4629 BN/BK
4628 WH/GN
1139 VT/WH
250 BK
KI5
KI4
KI5
KI4
X602 4
X602 3
4628 WH/GN
1139 VT/WH
6133 GN/BU
X1 1
X2 4
3
10
B+
IGN
T1 DC/AC Converter Control Module
X1 2
1450 BK
G408B
G102B

6885610

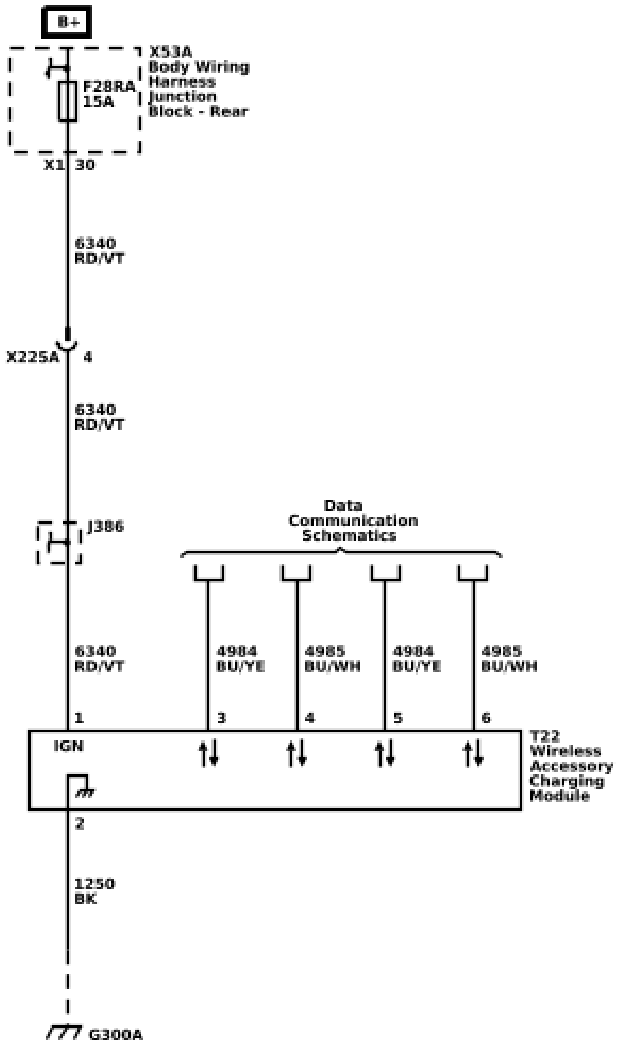
## Cigar Lighter/Power Outlet Schematics (110V AC Accessory Power Receptacles (KI4))


T1
DC/AC
Converter
Control
Module
110V AC Phase A
110V AC Phase B
X2
1
8
9
2
5
12
7
14
13
10117 BK
10118 RD
10116 BARE
4049 VT/RD
6807 BU/BN
2266 GN/BN
10120 BK/WH
10121 RD/WH
10119 BARE
J362
J430
10116 BK/WH
4049 VT/RD
X225A X225D
41 41
42 42
54 54
3 3
35(-AZ3) 35(AZ3)
W7 Blunt Cut - Shield
Interior Lights Dimming Schematics
6817 YE
J320
10116 BARE
4049 VT/RD
X81ACA
Front Floor
Console
Accessory
Power Rear
Receptacle -
110V AC
A90 Logic
X81RA
Quarter
Lower Rear
Trim Panel
Accessory
Power
Receptacle -
110V AC
1250 BK
1450 BK
G300A
G408A
6885611

## Cigar Lighter/Power Outlet Schematics (220V AC Accessory Power Receptacles (KI5))


6885612
T1 DC/AC Converter Control Module
220V AC Phase A
220V AC Phase B
X2
1
8
9
2
5
7
14
13
12
686 BN
6865 BU
2526 BARE
4049 VT/RD
6807 BU/BN
2262 BN/WH
2263 BU/WH
2544 BARE
2266 GN/BN
X602
10117 BK
10118 RD
10116 BARE
J362
J430
10116 BK/WH
X225A
X225D
41 41
42 42
54 54
3 3
35(-AZ3) 35(AZ3)
10116 BK/WH
J320
10116 BARE
W7 Blunt Cut - Shield
10120 BK/WH
10121 RD/WH
10119 BARE
Interior Lights Dimming Schematics
6817 YE
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC
A90 Logic
1250 BK
G300A
1450 BK
G408A

## Cigar Lighter/Power Outlet Schematics (Wireless Charging (K7A))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F28RA
15A
X1 30
6340
RD/VT
X225A 4
6340
RD/VT
J386
6340
RD/VT
Data
Communication
Schematics
4984
BU/YE
4985
BU/WH
4984
BU/YE
4985
BU/WH
1
3
4
5
6
IGN
T22
Wireless
Accessory
Charging
Module
2
1250
BK
G300A
6885613

# Description and Operation

## Mobile Device Wireless Charger Description and Operation

### Mobile Device Wireless Charging System

The Mobile Device Wireless Charging System (WCS) is an system for wirelessly charging mobile devices. It is capable of charging the batteries of compatible mobile devices. A compatible device is one that is compliant with Power Matters Alliance (PMA), Wireless Power Consortium (WPC) Standard, or Alliance for Wireless Power (A4WP), meaning that it is equipped with a PMA, WPC, or A4WP wireless charge “receiver” that will work with the charge “transmitter” installed in the vehicle. The devices may utilize built-in charging circuitry or an adapter (external plug-in device which contains the charging circuitry). To check for phone or other device compatibility, refer to GM Total Connect.

***Warning: Remove all objects from the charging pad before charging your mobile device. Objects, such as coins, keys, rings, paper clips, or cards, between the phone and charging pad will become very hot. On the rare occasion that the charging system does not detect an object, and the object gets wedged between the phone and charger, remove the phone and allow the object to cool before removing it from the charging pad, to prevent burns.***

### Charging

To charge a device, place it on the charging surface in the vehicle. There is a charging coil located in the center of the charging surface. The device has a charging coil typically near the center of the device. These coils must be lined up in order for charging to proceed. When the interruptible retained accessory power (IRAP) relay is closed (this is true typically when vehicle ignition is in Run or Accessory position), the WCS will detect the device, establish communications with the device to confirm it is a compatible device, and then deliver charging power to the device via wireless interface. The WCS will be able to deliver 5W to 15W of power as requested by the compatible device. It shall only enter a charging state if communication is established and a compatible device is identified.

The WCS shall not enter a charging state if there is no communication established with a compatible device. Due to differences in objects, a foreign object detection protocol is employed to detect a non-compliant device and hold power transfer initiation until the non-compliant object has been removed and a compliant object has been detected. The charger monitors its internal temperature and will shut down if the charger temperature exceeds 185F (85C).

### Indicator

The K9 Body Control Module will detect the device battery is charging and send a serial data message on the GMLAN bus to the radio display. The radio display will indicate a device is currently charging by displaying a lightning bolt over the phone icon. When the indicator is toggling on and off this indicates a thermal limit has been reached and the device will not charge. For more information refer to the owners manual.

### Cooling

The Wireless Charge modules (WCM) have a fan on the bottom of the module. When the WCM charges, it simply pulls or pushes air from the phone, through the vents in the rubber liner, over the module, and down into the center console.

## Power Outlets Description and Operation

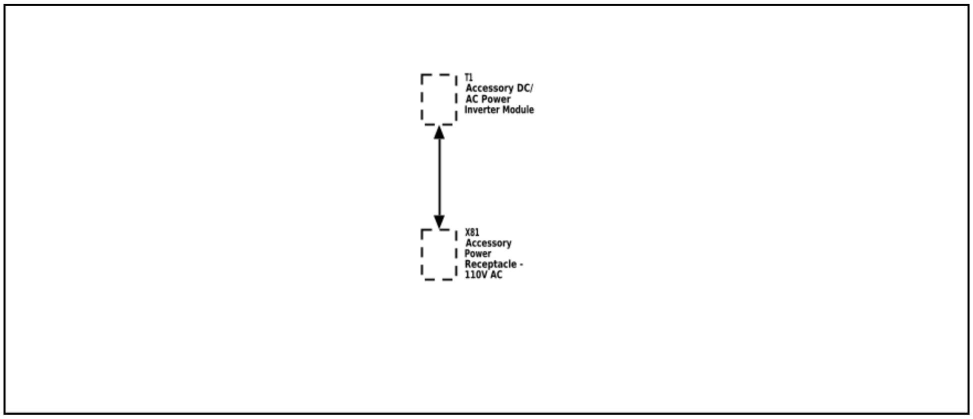
### 12 Volt Power Outlet Receptacle Description and Operation

The 12 V accessory power receptacles are supplied with power by the accessory relay.

The vehicle is fitted with a cigarette lighter and/or with a 12 V accessory power receptacle. The cigarette lighter and accessory power outlets are controlled by an ignition operated relay. The accessory power receptacle and cigarette lighter are operational when the ignition is turned to either the On or the Accessories positions. To operate the cigarette lighter, press in the lighter knob. When the element is hot, the lighter automatically pops out and is ready for use.

### 110 Volt Power Outlet Receptacle System Description

**Power Outlets Block Diagram**



3403851

Hard-Wired

T1 Accessory DC/AC Power Inverter Module

X81 Accessory Power Receptacle - 110V AC

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 110 V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 110 V at 60 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 110 V AC provides the usual connection for AC powered devices.

### 110 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 110 V AC has an internal switch, that detects when an AC powered device is plugged into the outlet, and an Accessory Power Switch located on the S86 Vehicle Stability Control System Switch. When the ignition is ON, the Accessory Power Switch is ON, and an AC powered device is plugged into the accessory power receptacle – 110 V AC, the normally open switch in the accessory power receptacle – 110 V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 110 V AC switch, the inverter module begins to supply 110 V AC to the accessory power receptacle – 110 V AC after a 1.5 s delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

### 110 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 110 V circuit for a short to vehicle chassis ground. If a 110 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

### 110 Volt Power Outlet Receptacle Overload Shutdown

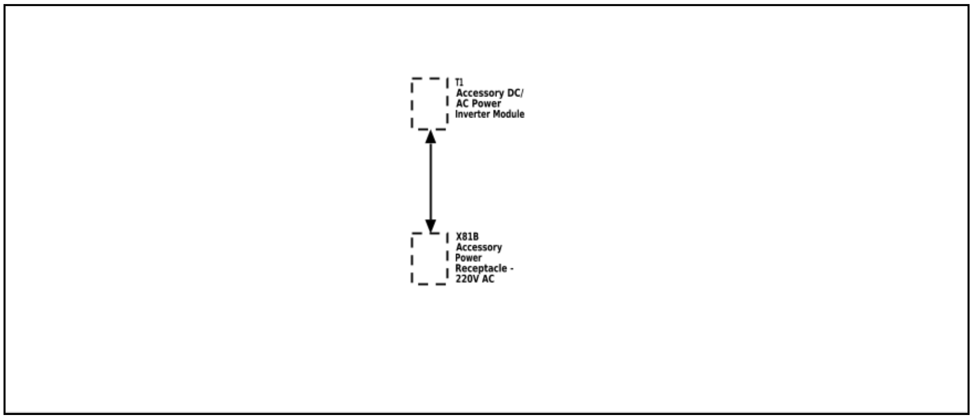
The accessory DC/AC power inverter module will turn OFF if the current in the 110 V circuit is greater than 3.8 A for 1 s , or 2.5 A for 10 s . The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

### 110 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the outlet, and then plugged into the outlet.

### 230 Volt Power Outlet Receptacle System Description

**Power Outlets Block Diagram**



3403853

Hard-Wired

T1 Accessory DC/AC Power Inverter Module

X81B Accessory Power Receptacle - 220V AC

The alternating current (AC) accessory power outlet system consists of the accessory DC/AC power inverter module and the accessory power receptacle – 220V AC. The accessory DC/AC power inverter module converts 12 V direct current (DC) battery power to 220–230 V at 50 Hertz (Hz) AC power to operate AC powered devices. The accessory DC/AC power inverter module provides up to 400 watts of power. The accessory power receptacle – 220V AC provides the usual connection for AC powered devices.

### 230 Volt Power Outlet Receptacle System Operation

The accessory DC/AC power inverter module receives fuse protected battery voltage and is connected to the 12 V electrical system ground. The accessory power receptacle – 220 V AC has an internal switch, that detects when an AC powered device is plugged into the outlet, and an Accessory Power Switch located on the S86 Vehicle Stability Control System Switch. When the ignition is ON, the Accessory Power Switch is ON, and an AC powered device is plugged into the accessory power receptacle – 220 V AC, the normally open switch in the accessory power receptacle – 220 V AC, closes. When the accessory DC/AC power inverter module detects the voltage from the accessory power receptacle – 220 V AC switch, the inverter module begins to supply 220 V AC to the accessory power receptacle – 220 V AC after a 1.5 s delay. The accessory AC power system is protected against circuit overload and circuit shorts to ground.

### 230 Volt Power Outlet Receptacle Isolation Fault Protection

The accessory DC/AC power inverter module contains a ground fault circuit interrupter (GFCI). GFCI monitors the 230 V circuit for a short to vehicle chassis ground. If a 230 V AC short to ground is detected, the accessory DC/AC power inverter module will turn OFF. The module remains OFF, until the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 s delay.

### 230 Volt Power Outlet Receptacle Overload Shutdown

The accessory AC/DC power control module will turn OFF if the current in the 230 V circuit is greater than 3.8 A for 1 second, or 2.5 A for 10 seconds. The module will turn ON again, when the AC powered device is unplugged from the outlet, and then plugged into the outlet after a 3 second delay.

### 230 Volt Power Outlet Receptacle Internal Shutdown

The accessory DC/AC power inverter module will turn OFF if the B+ supply voltage is greater than 16.5 V or less than 11 V. The module will also turn OFF if the device temperature is greater than 85°C (185°F). The module will turn ON again, after the shutdown condition is corrected, and the AC powered device is unplugged from the accessory power receptacle – 220V AC, and then plugged into the accessory power receptacle – 220V AC.

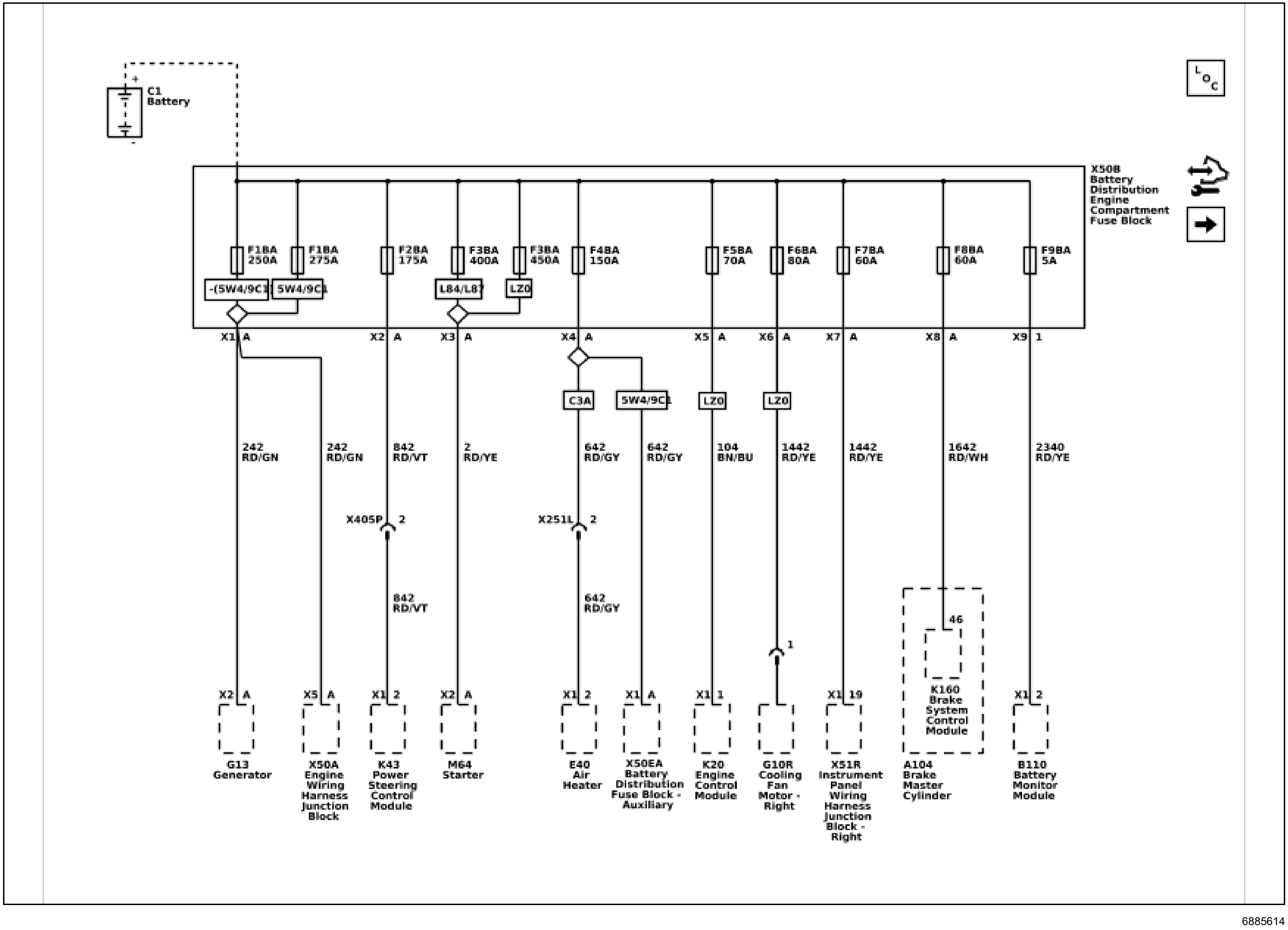
### USB Receptacle Description and Operation (USS)

The vehicle is fitted with USB charge port receptacles at the rear of the floor console. These USB receptacles are for charging devices only. The USB receptacles are controlled by an ignition operated relay and are operational when the ignition is turned to either the On or the Accessories positions.

# Wiring Systems and Power Management

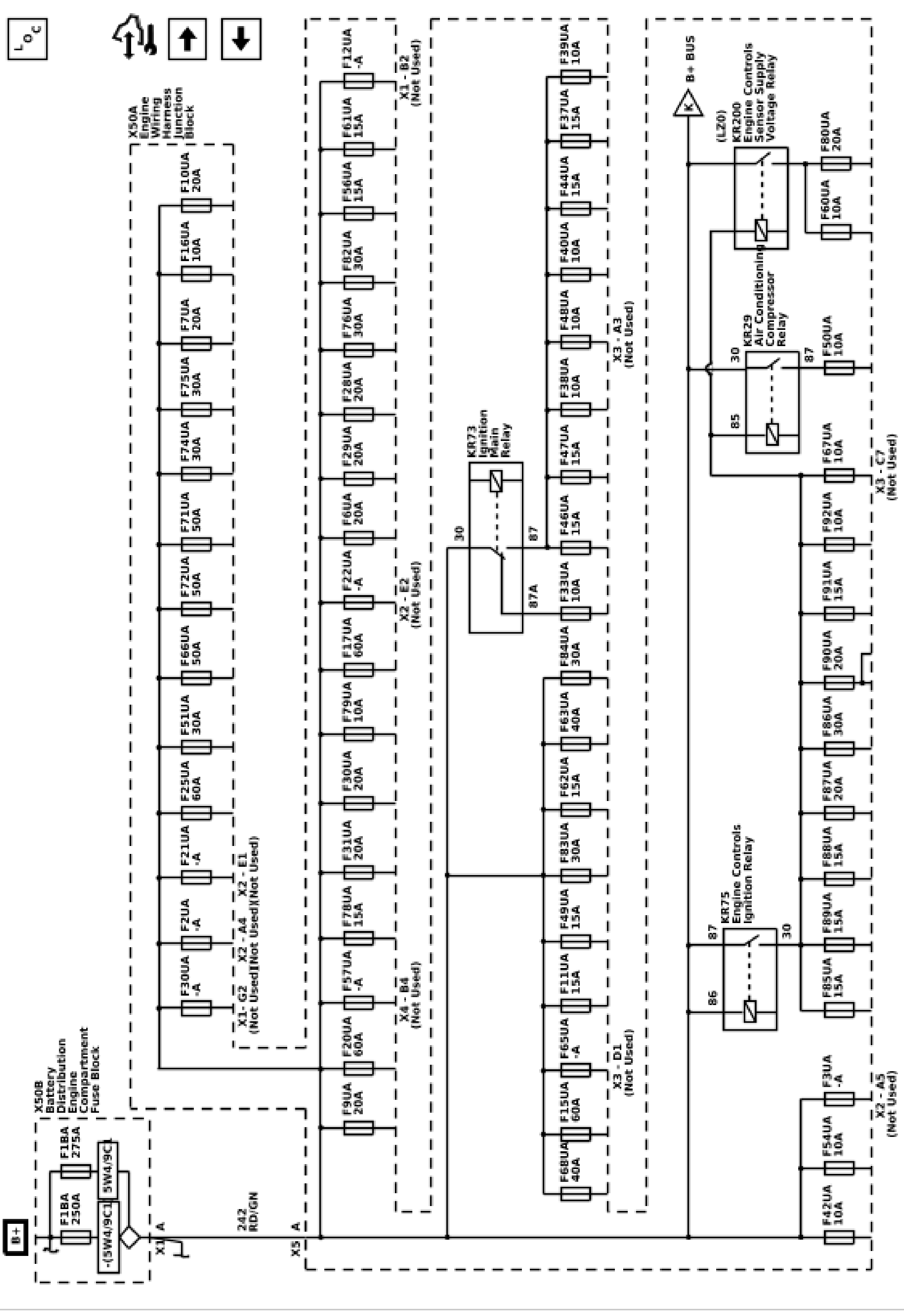
## Schematic and Routing Diagrams

## Power Distribution Schematics (X50B Battery Distribution Engine Compartment Fuse Block)

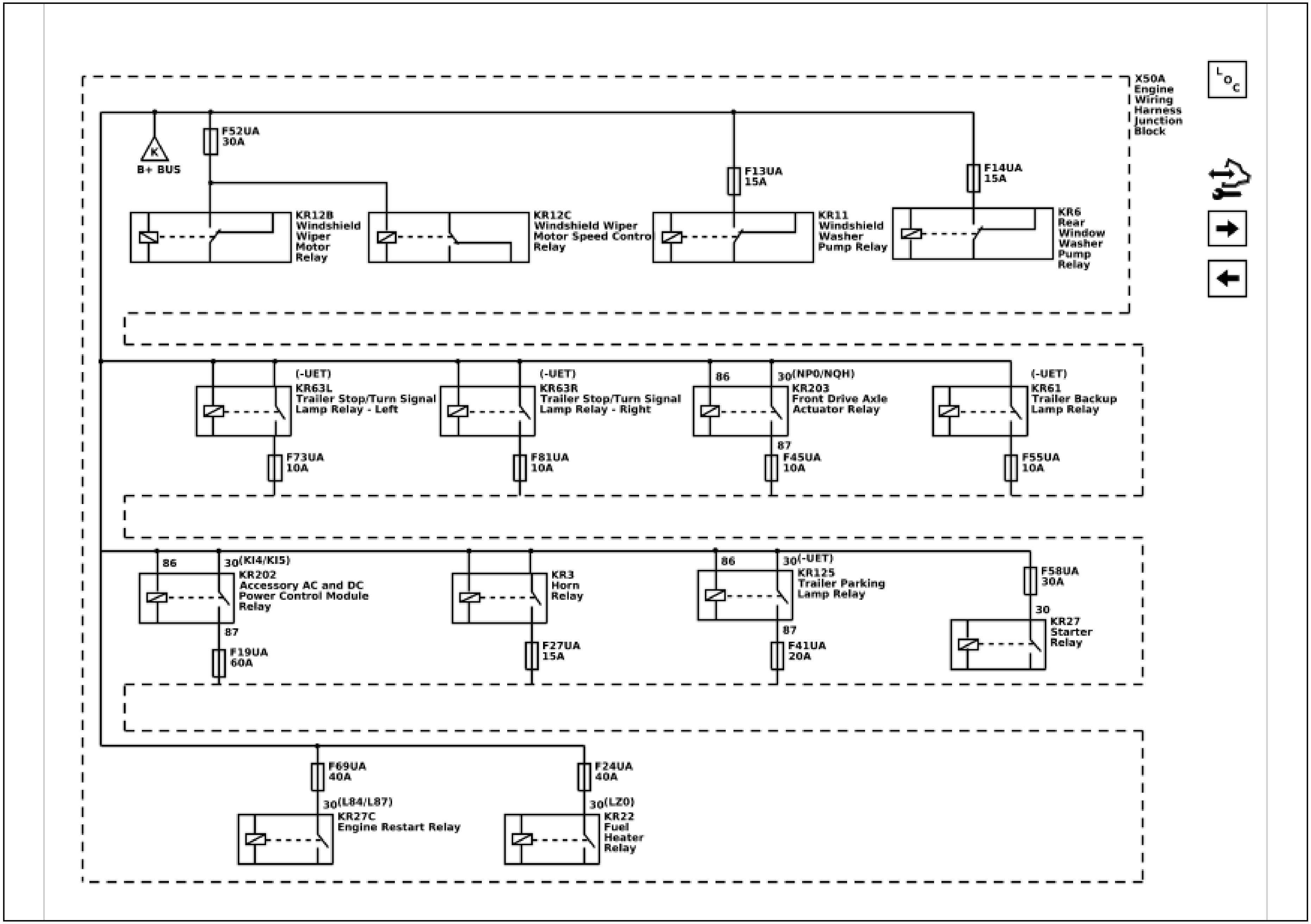

C1 Battery
+
-
X50B Battery Distribution Engine Compartment Fuse Block
F1BA 250A
F1BA 275A
F2BA 175A
F3BA 400A
F3BA 450A
F4BA 150A
F5BA 70A
F6BA 80A
F7BA 60A
F8BA 60A
F9BA 5A
-(5W4/9C1)
5W4/9C1
L84/L87
LZ0
X1 A
X2 A
X3 A
X4 A
X5 A
X6 A
X7 A
X8 A
X9 1
C3A
5W4/9C1
LZ0
LZ0
242 RD/GN
242 RD/GN
842 RD/VT
2 RD/YE
642 RD/GY
642 RD/GY
104 BN/BU
1442 RD/YE
1442 RD/YE
1642 RD/WH
2340 RD/YE
X405P 2
X251L 2
842 RD/VT
642 RD/GY
46
1
X2 A
X5 A
X1 2
X2 A
X1 2
X1 A
X1 1
X1 19
X1 2
G13 Generator
X50A Engine Wiring Harness Junction Block
K43 Power Steering Control Module
M64 Starter
E40 Air Heater
X50EA Battery Distribution Fuse Block - Auxiliary
K20 Engine Control Module
G10R Cooling Fan Motor - Right
X51R Instrument Panel Wiring Harness Junction Block - Right
K160 Brake System Control Module
A104 Brake Master Cylinder
B110 Battery Monitor Module
6885614

6885615

## Power Distribution Schematics (X50A Engine Wiring Harness Junction Block - B+ Bus 1 of 2)

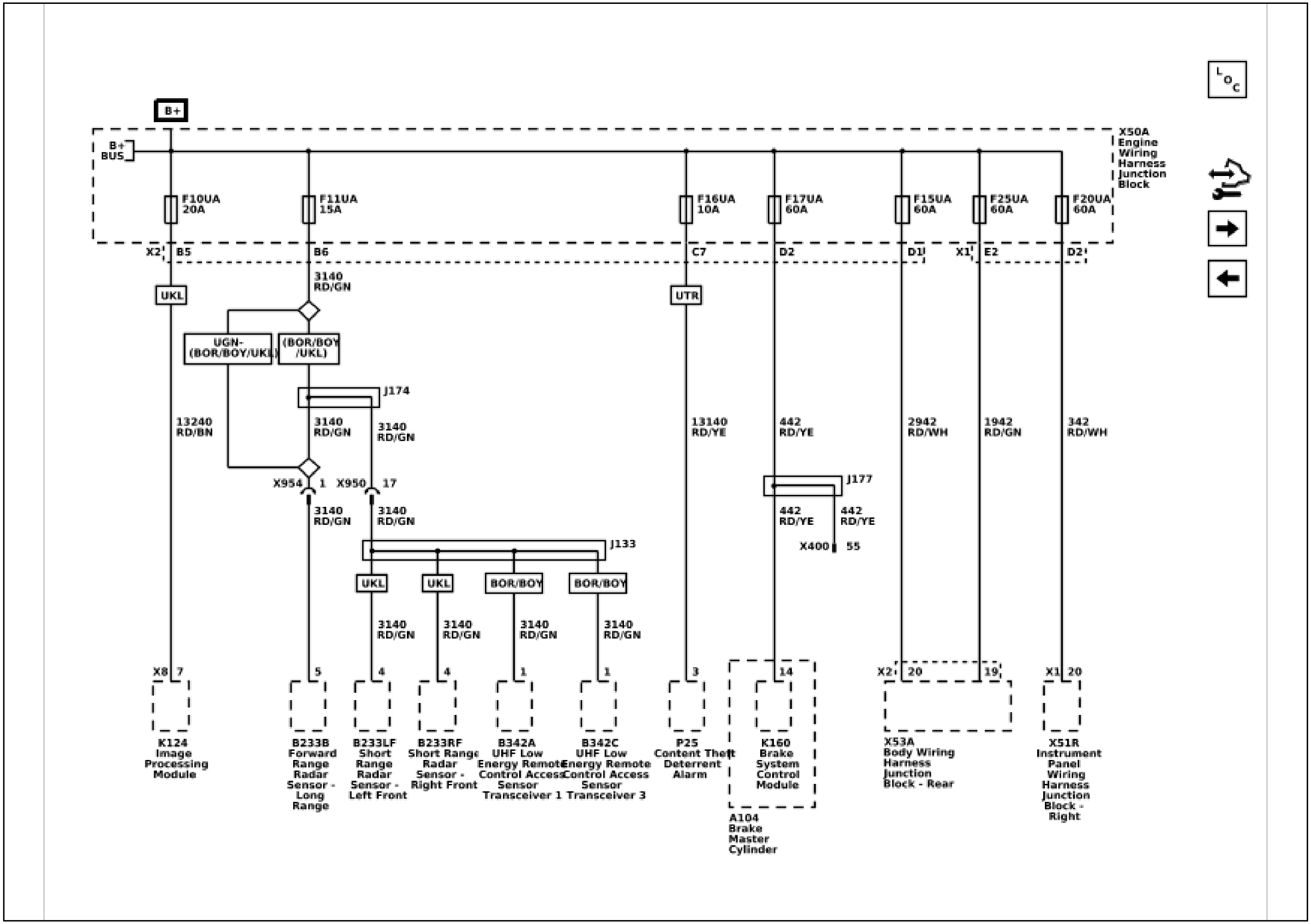

X50B Battery Distribution Engine Compartment Fuse Block
B+
F1BA 250A
F1BA 275A
5W4/9C1
-(5W4/9C1
X1 A
242 RD/GN
X5 A
X50A Engine Wiring Harness Junction Block
F30UA -A
F2UA -A
F21UA -A
F25UA 60A
F51UA 30A
F66UA 50A
F72UA 50A
F71UA 50A
F74UA 30A
F75UA 30A
F7UA 20A
F16UA 10A
F10UA 20A
X1 - G2 (Not Used)
X2 - A4 (Not Used)
X2 - E1 (Not Used)
F9UA 20A
F20UA 60A
F57UA -A
F78UA 15A
F31UA 20A
F30UA 20A
F79UA 10A
F17UA 60A
F22UA -A
F6UA 20A
F29UA 20A
F28UA 20A
F76UA 30A
F82UA 30A
F56UA 15A
F61UA 15A
F12UA -A
X4 - B4 (Not Used)
X2 - E2 (Not Used)
X1 - B2 (Not Used)
KR73 Ignition Main Relay
30
87
87A
F68UA 40A
F15UA 60A
F65UA -A
F11UA 15A
F49UA 15A
F83UA 30A
F62UA 15A
F63UA 40A
F84UA 30A
F33UA 10A
F46UA 15A
F47UA 15A
F38UA 10A
F48UA 10A
F40UA 10A
F44UA 15A
F37UA 15A
F39UA 10A
X3 - D1 (Not Used)
X3 - A3 (Not Used)
F42UA 10A
F54UA 10A
F3UA -A
X2 - A5 (Not Used)
KR75 Engine Controls Ignition Relay
86
87
30
F85UA 15A
F89UA 15A
F88UA 15A
F87UA 20A
F86UA 30A
F90UA 20A
F91UA 15A
F92UA 10A
F67UA 10A
X3 - C7 (Not Used)
KR29 Air Conditioning Compressor Relay
85
30
87
F50UA 10A
F60UA 10A
(LZ0) KR200 Engine Controls Sensor Supply Voltage Relay
F80UA 20A
K
B+ BUS

## Power Distribution Schematics (X50A Engine Wiring Harness Junction Block - B+ Bus 2 of 2)

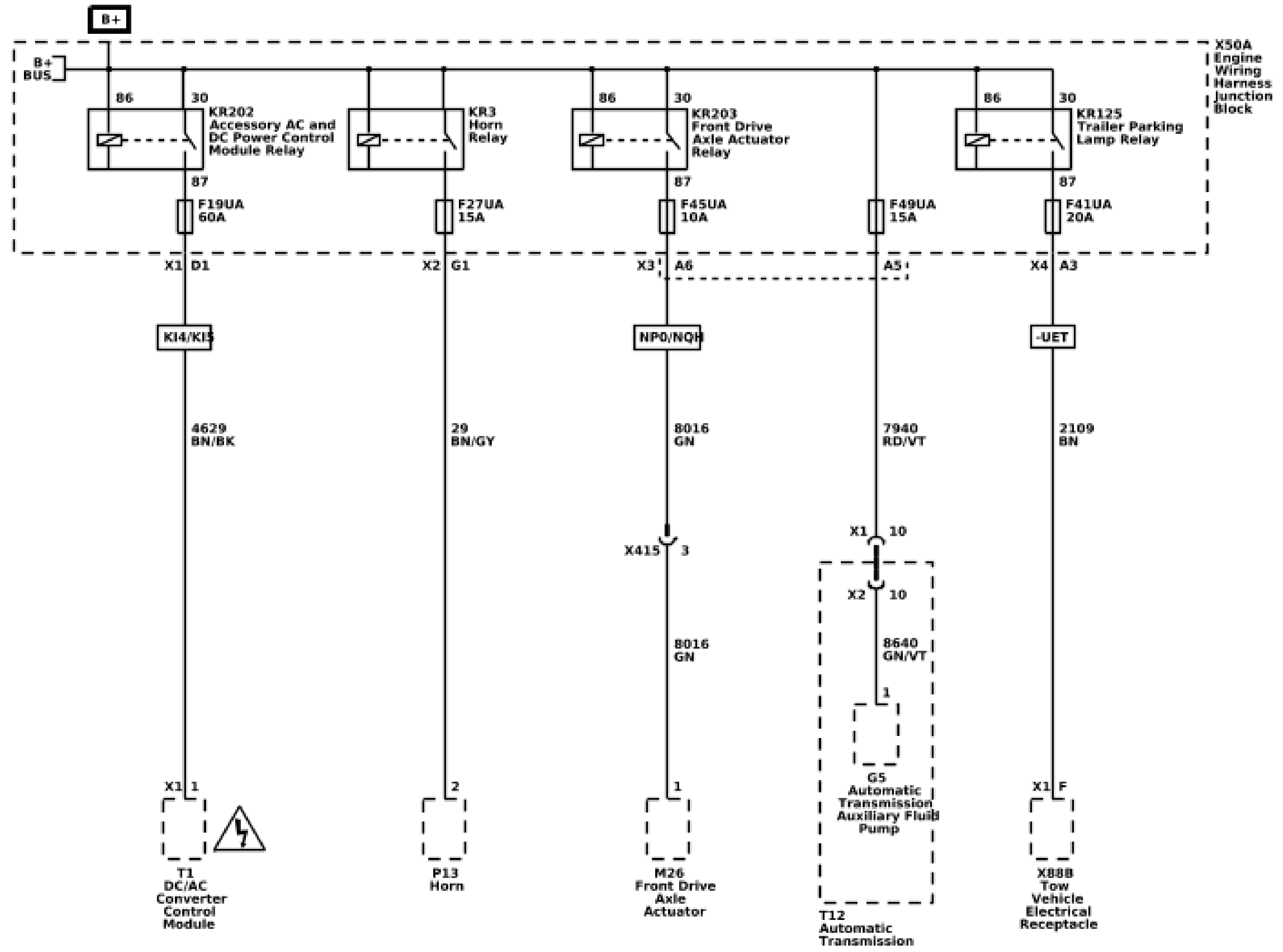

X50A Engine Wiring Harness Junction Block
K
B+ BUS
F52UA 30A
F13UA 15A
F14UA 15A
KR12B Windshield Wiper Motor Relay
KR12C Windshield Wiper Motor Speed Contro Relay
KR11 Windshield Washer Pump Relay
KR6 Rear Window Washer Pump Relay
(-UET) KR63L Trailer Stop/Turn Signal Lamp Relay - Left
(-UET) KR63R Trailer Stop/Turn Signal Lamp Relay - Right
86
30(NP0/NQH) KR203 Front Drive Axle Actuator Relay
87
(-UET) KR61 Trailer Backup Lamp Relay
F73UA 10A
F81UA 10A
F45UA 10A
F55UA 10A
86
30(KI4/KI5) KR202 Accessory AC and DC Power Control Module Relay
87
KR3 Horn Relay
86
30(-UET) KR125 Trailer Parking Lamp Relay
87
F58UA 30A
30
KR27 Starter Relay
F19UA 60A
F27UA 15A
F41UA 20A
F69UA 40A
F24UA 40A
30(L84/L87) KR27C Engine Restart Relay
30(LZ0) KR22 Fuel Heater Relay

6885616

## Power Distribution Schematics (F10UA, F11UA, F15UA, F16UA, F17UA, F20UA, and F25UA Fuses)

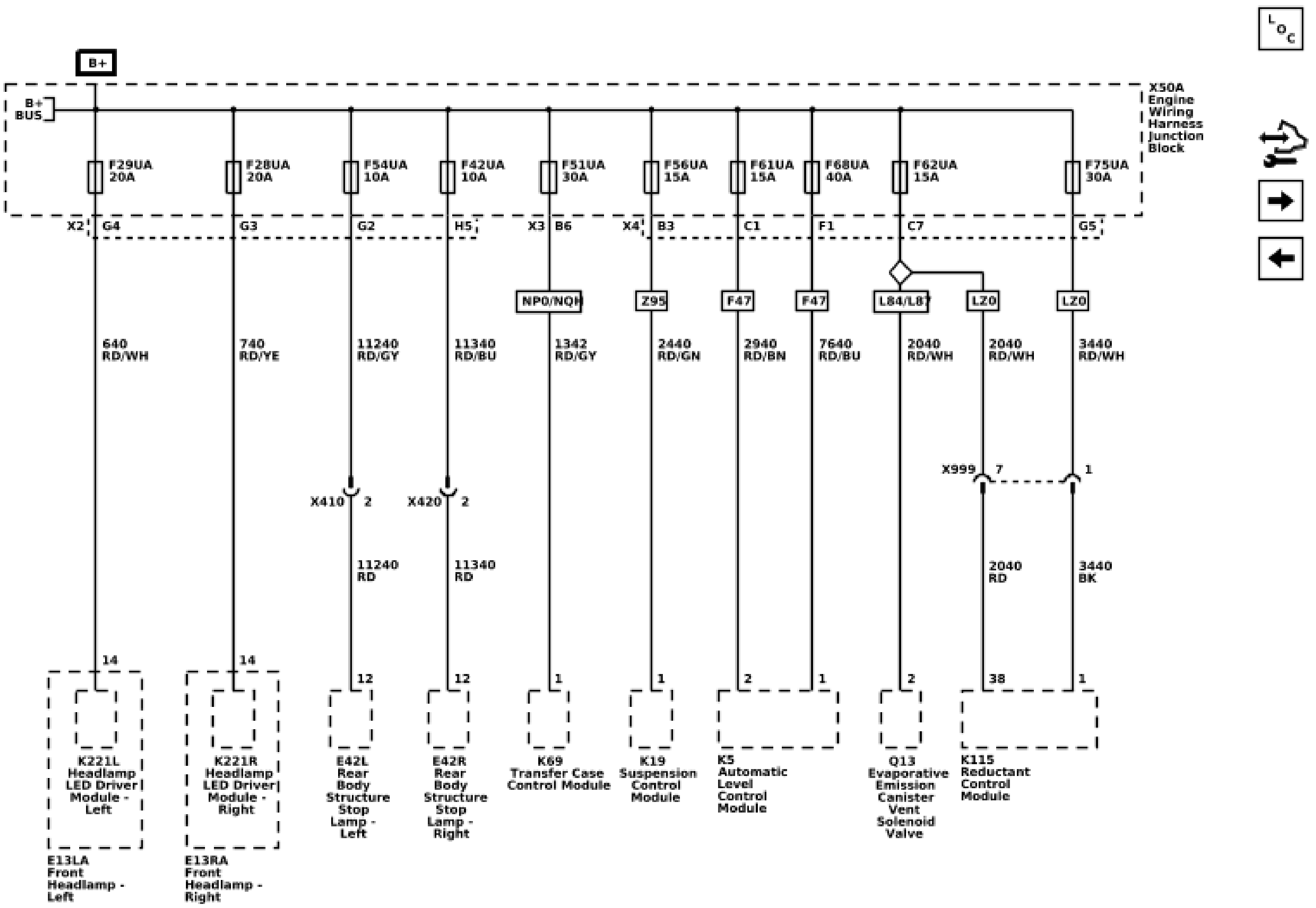

B+
X50A Engine Wiring Harness Junction Block
B+ BUS
F10UA 20A
F11UA 15A
F16UA 10A
F17UA 60A
F15UA 60A
F25UA 60A
F20UA 60A
X2 B5
B6
C7
D2
D1
X1 E2
D2
UKL
UTR
3140 RD/GN
UGN-(BOR/BOY/UKL)
(BOR/BOY/UKL)
J174
13240 RD/BN
3140 RD/GN
3140 RD/GN
13140 RD/YE
442 RD/YE
2942 RD/WH
1942 RD/GN
342 RD/WH
J177
X954 1
X950 17
3140 RD/GN
3140 RD/GN
442 RD/YE
442 RD/YE
X400 55
J133
UKL
UKL
BOR/BOY
BOR/BOY
3140 RD/GN
3140 RD/GN
3140 RD/GN
3140 RD/GN
X8 7
5
4
4
1
1
3
14
X2 20
19
X1 20
K124 Image Processing Module
B233B Forward Range Radar Sensor - Long Range
B233LF Short Range Radar Sensor - Left Front
B233RF Short Range Radar Sensor - Right Front
B342A UHF Low Energy Remote Control Access Sensor Transceiver 1
B342C UHF Low Energy Remote Control Access Sensor Transceiver 3
P25 Content Theft Deterrent Alarm
K160 Brake System Control Module
A104 Brake Master Cylinder
X53A Body Wiring Harness Junction Block - Rear
X51R Instrument Panel Wiring Harness Junction Block - Right
6885617

## Power Distribution Schematics (F19UA, F27UA, F41UA, F45UA, and F49UA Fuses)


B+
B+ BUS
X50A Engine Wiring Harness Junction Block
86
30
KR202 Accessory AC and DC Power Control Module Relay
87
F19UA 60A
X1 D1
KI4/KI5
4629 BN/BK
X1 1
T1 DC/AC Converter Control Module
KR3 Horn Relay
F27UA 15A
X2 G1
29 BN/GY
2
P13 Horn
KR203 Front Drive Axle Actuator Relay
F45UA 10A
X3 A6
NP0/NQH
8016 GN
X415 3
8016 GN
1
M26 Front Drive Axle Actuator
F49UA 15A
A5
7940 RD/VT
X1 10
X2 10
8640 GN/VT
1
G5 Automatic Transmission Auxiliary Fluid Pump
T12 Automatic Transmission
KR125 Trailer Parking Lamp Relay
F41UA 20A
X4 A3
-UET
2109 BN
X1 F
X88B Tow Vehicle Electrical Receptacle

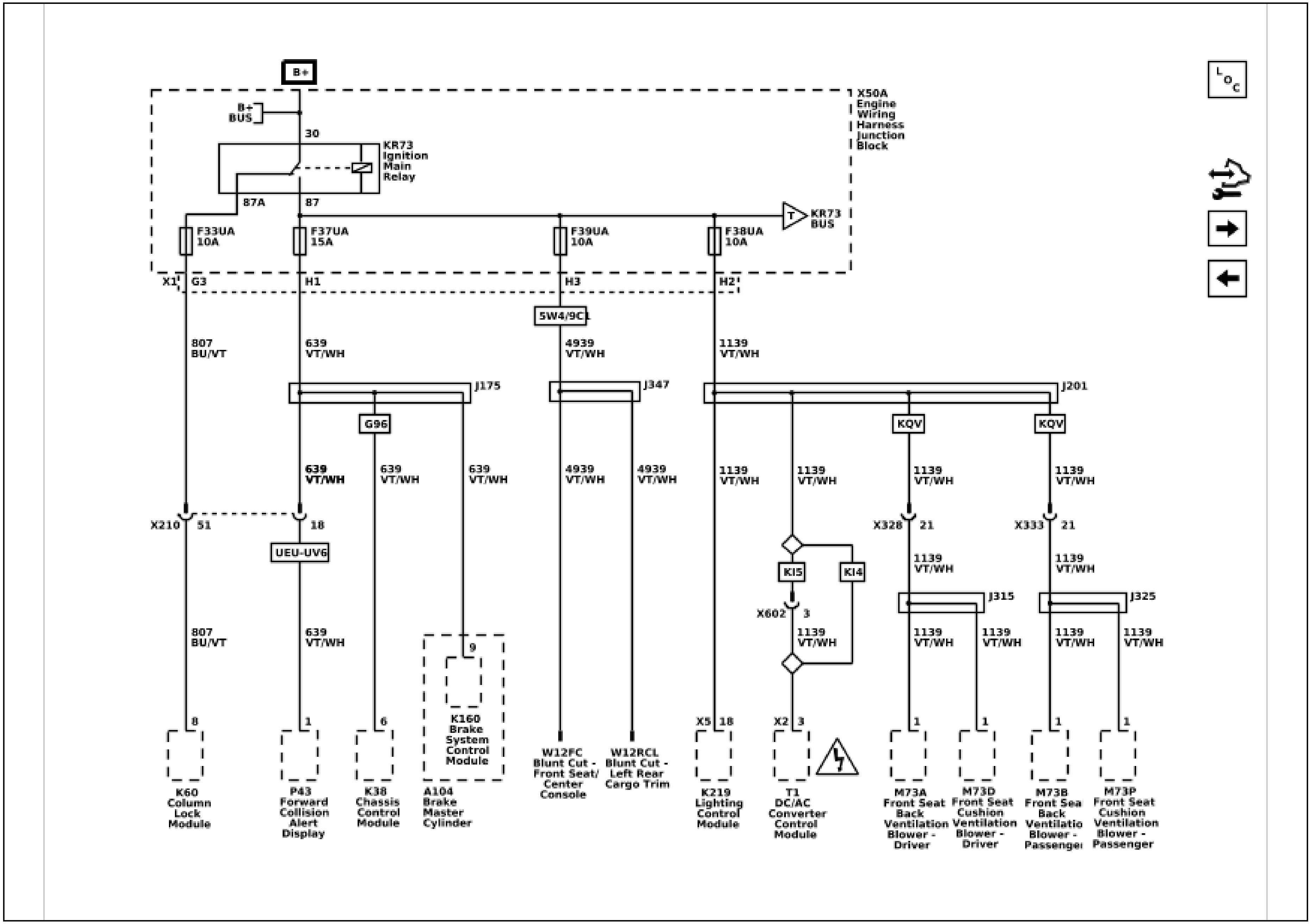
6885618

## Power Distribution Schematics (F28UA, F29UA, F42UA, F51UA, F54UA, F56UA, F61UA, F62UA, F68UA, and F75UA Fuses)


B+
B+ BUS
X50A Engine Wiring Harness Junction Block
F29UA 20A
F28UA 20A
F54UA 10A
F42UA 10A
F51UA 30A
F56UA 15A
F61UA 15A
F68UA 40A
F62UA 15A
F75UA 30A
X2 G4
G3
G2
H5
X3 B6
X4 B3
C1
F1
C7
G5
NP0/NQH
Z95
F47
F47
L84/L87
LZ0
LZ0
640 RD/WH
740 RD/YE
11240 RD/GY
11340 RD/BU
1342 RD/GY
2440 RD/GN
2940 RD/BN
7640 RD/BU
2040 RD/WH
2040 RD/WH
3440 RD/WH
X410 2
X420 2
X999 7
1
11240 RD
11340 RD
2040 RD
3440 BK
14
14
12
12
1
1
2
1
2
38
1
K221L Headlamp LED Driver Module - Left
K221R Headlamp LED Driver Module - Right
E42L Rear Body Structure Stop Lamp - Left
E42R Rear Body Structure Stop Lamp - Right
K69 Transfer Case Control Module
K19 Suspension Control Module
K5 Automatic Level Control Module
Q13 Evaporative Emission Canister Vent Solenoid Valve
K115 Reductant Control Module
E13LA Front Headlamp - Left
E13RA Front Headlamp - Right
LOC

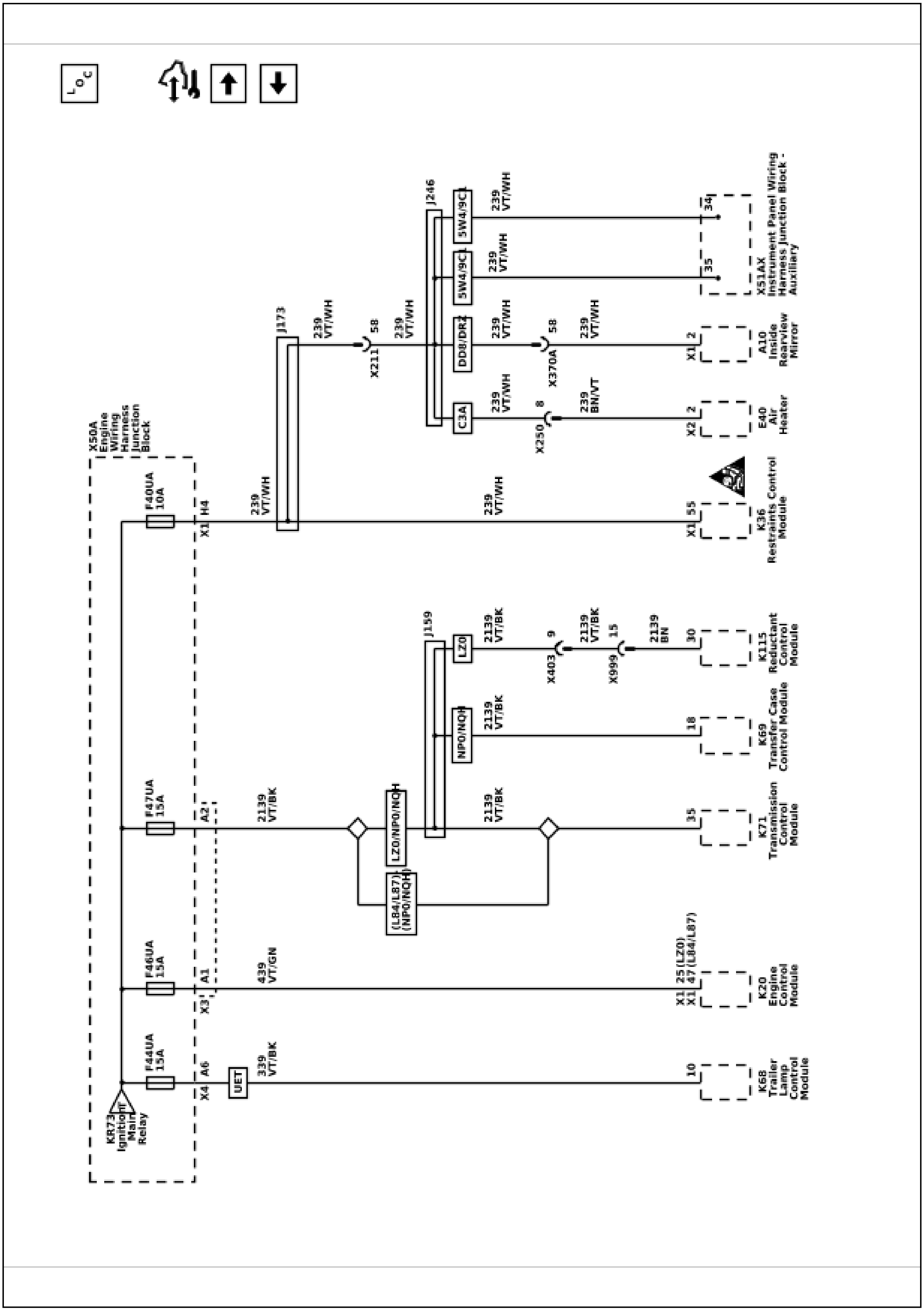
6885619

## Power Distribution Schematics (F33UA, F37UA, F38UA, and F39UA Fuses)


B+
B+ BUS
30
KR73 Ignition Main Relay
87A
87
X50A Engine Wiring Harness Junction Block
KR73 BUS
F33UA 10A
F37UA 15A
F39UA 10A
F38UA 10A
X1
G3
H1
H3
H2
5W4/9C1
807 BU/VT
639 VT/WH
4939 VT/WH
1139 VT/WH
J175
J347
J201
G96
KQV
X210
51
18
UEU-UV6
X328
21
X333
KI5
KI4
X602
3
J315
J325
8
1
6
9
X5 18
X2 3
K60 Column Lock Module
P43 Forward Collision Alert Display
K38 Chassis Control Module
K160 Brake System Control Module
A104 Brake Master Cylinder
W12FC Blunt Cut - Front Seat/ Center Console
W12RCL Blunt Cut - Left Rear Cargo Trim
K219 Lighting Control Module
T1 DC/AC Converter Control Module
M73A Front Seat Back Ventilation Blower - Driver
M73D Front Seat Cushion Ventilation Blower - Driver
M73B Front Seat Back Ventilation Blower - Passenger
M73P Front Seat Cushion Ventilation Blower - Passenger
L O C

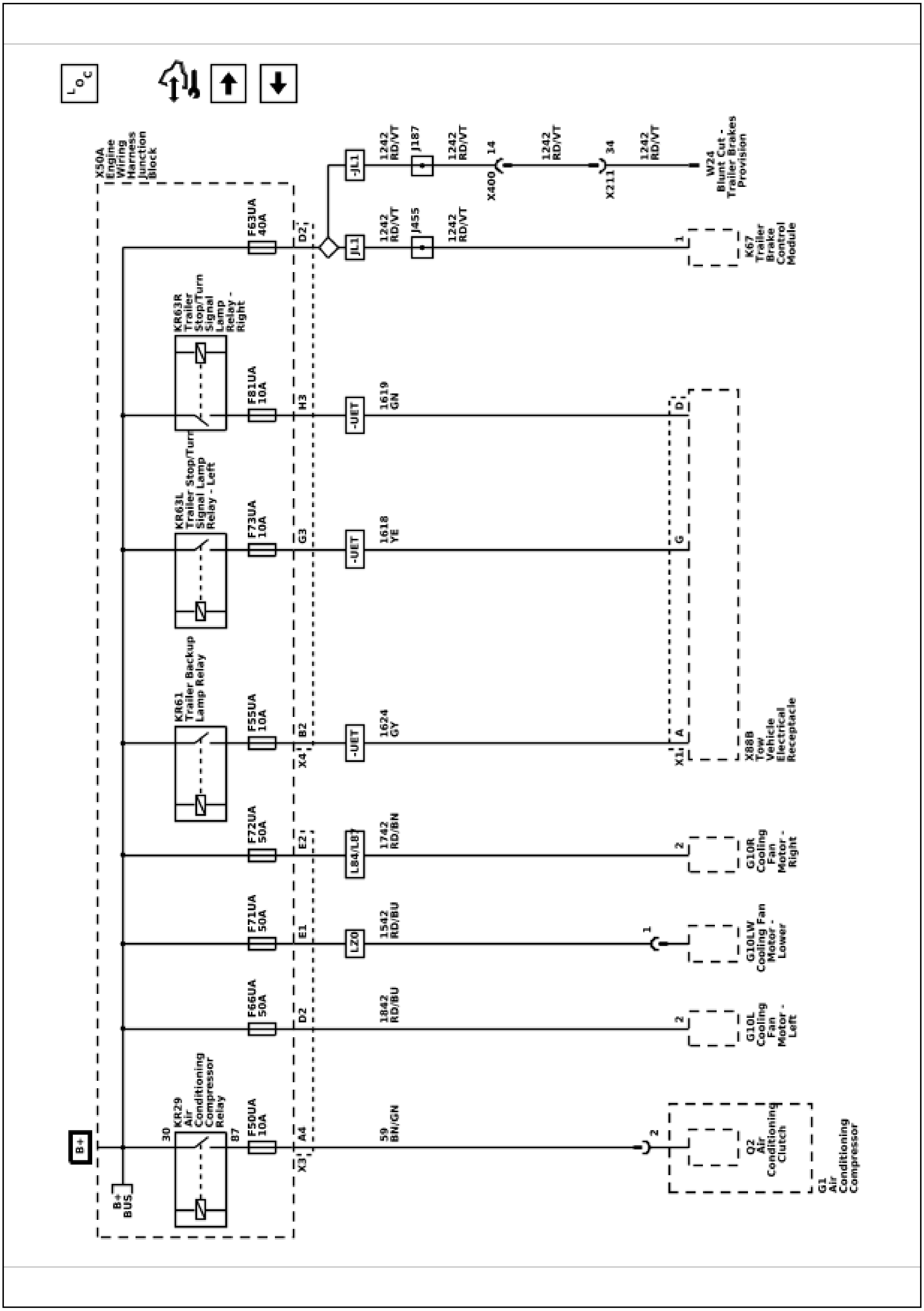
6885621

## Power Distribution Schematics (F40UA, F44UA, F46UA, and F47UA Fuses)

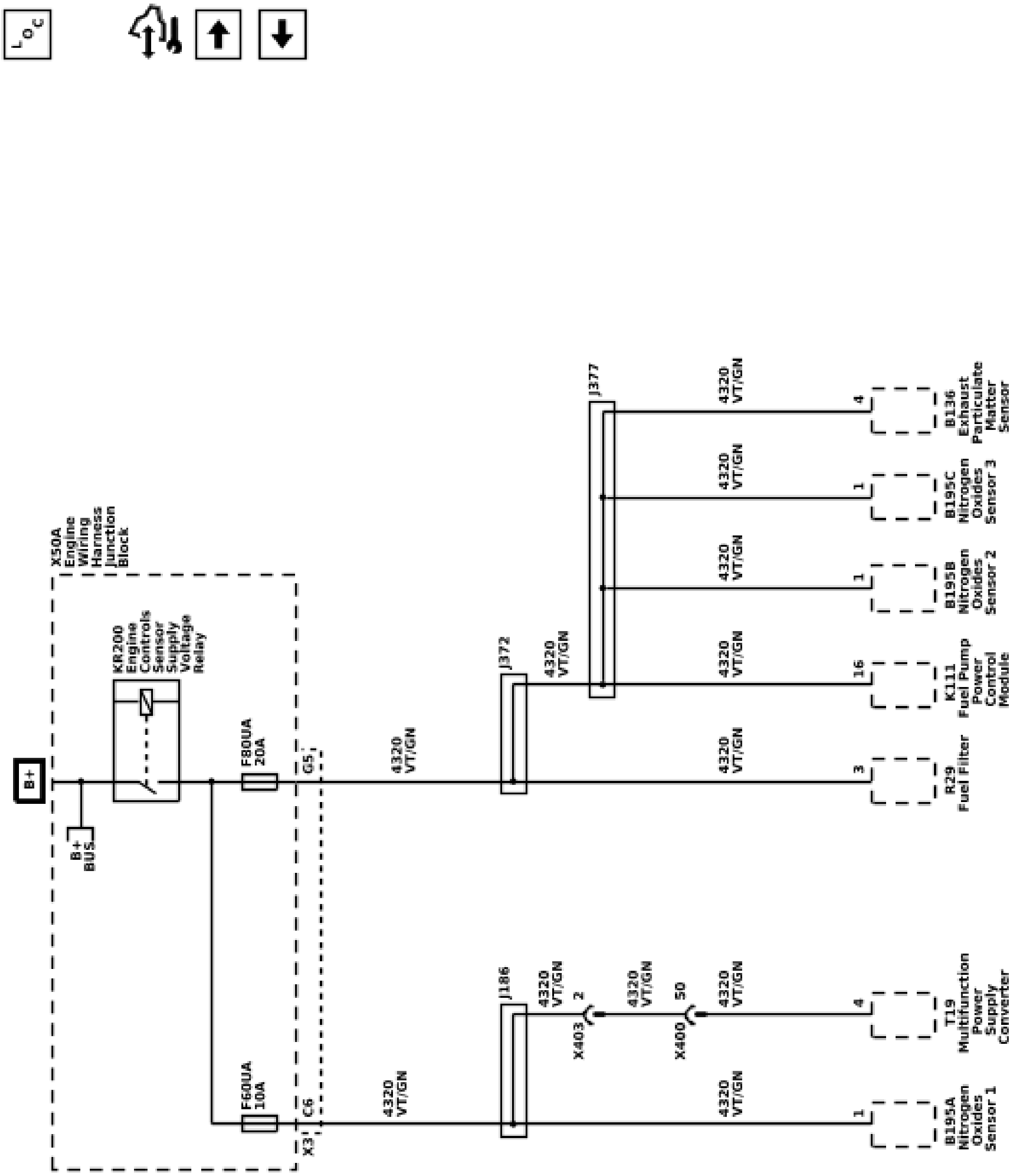

X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F40UA 10A
F47UA 15A
F46UA 15A
F44UA 15A
X1 H4
A2
X3 A1
X4 A6
UET
239 VT/WH
2139 VT/BK
439 VT/GN
339 VT/BK
J173
J246
J159
X211
58
C3A
DD8/DR2
5W4/9C
X250
8
239 BN/VT
X370A
LZ0
NP0/NQH
LZ0/NP0/NQH
(L84/L87) (NP0/NQH)
X403
9
X999
15
2139 BN
34
35
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
X1 2
A10 Inside Rearview Mirror
X2 2
E40 Air Heater
X1 55
K36 Restraints Control Module
30
K115 Reductant Control Module
18
K69 Transfer Case Control Module
35
K71 Transmission Control Module
X1 25 (LZ0)
X1 47 (L84/L87)
K20 Engine Control Module
10
K68 Trailer Lamp Control Module

6885622

## Power Distribution Schematics (F50UA, F55UA, F63UA, F66UA, F71UA, F72UA, F73UA, and F81UA Fuses)

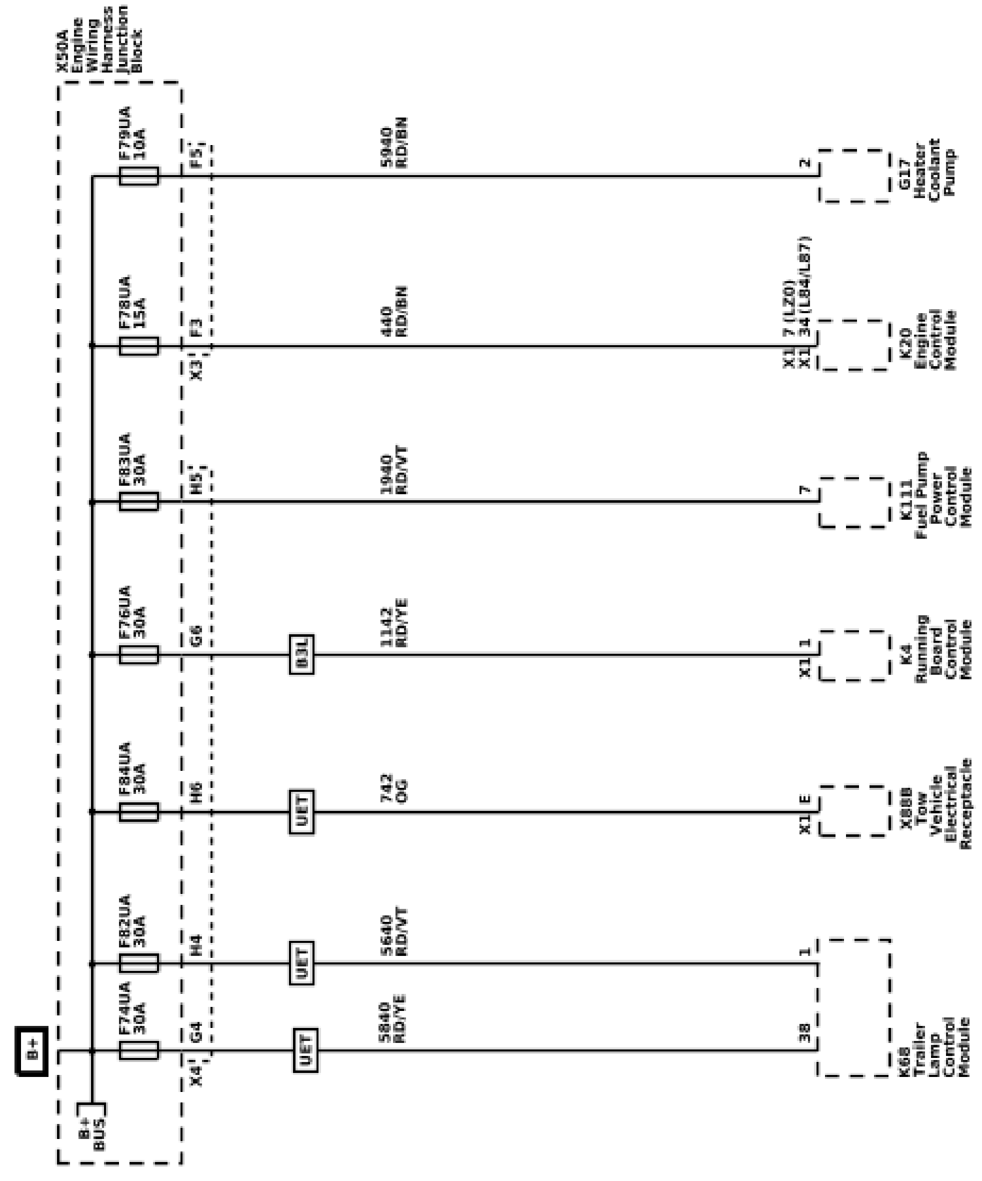

6885623
B+
B+ BUS
X50A Engine Wiring Harness Junction Block
KR29 Air Conditioning Compressor Relay
30
87
F50UA 10A
X3
A4
59 BN/GN
2
Q2 Air Conditioning Clutch
G1 Air Conditioning Compressor
F66UA 50A
D2
1842 RD/BU
2
G10L Cooling Fan Motor - Left
F71UA 50A
E1
LZ0
1542 RD/BU
1
G10LW Cooling Fan Motor - Lower
F72UA 50A
E2
L84/L87
1742 RD/BN
2
G10R Cooling Fan Motor - Right
KR61 Trailer Backup Lamp Relay
F55UA 10A
X4
B2
-UET
1624 GY
X1
A
X88B Tow Vehicle Electrical Receptacle
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
F73UA 10A
G3
-UET
1618 YE
G
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
F81UA 10A
H3
-UET
1619 GN
D
F63UA 40A
D2
JL1
1242 RD/VT
J455
1242 RD/VT
1
K67 Trailer Brake Control Module
-JL1
1242 RD/VT
J187
1242 RD/VT
X400 14
1242 RD/VT
X211 34
1242 RD/VT
W24 Blunt Cut - Trailer Brakes Provision

## Power Distribution Schematics (F60UA and F80UA Fuses (LZ0))

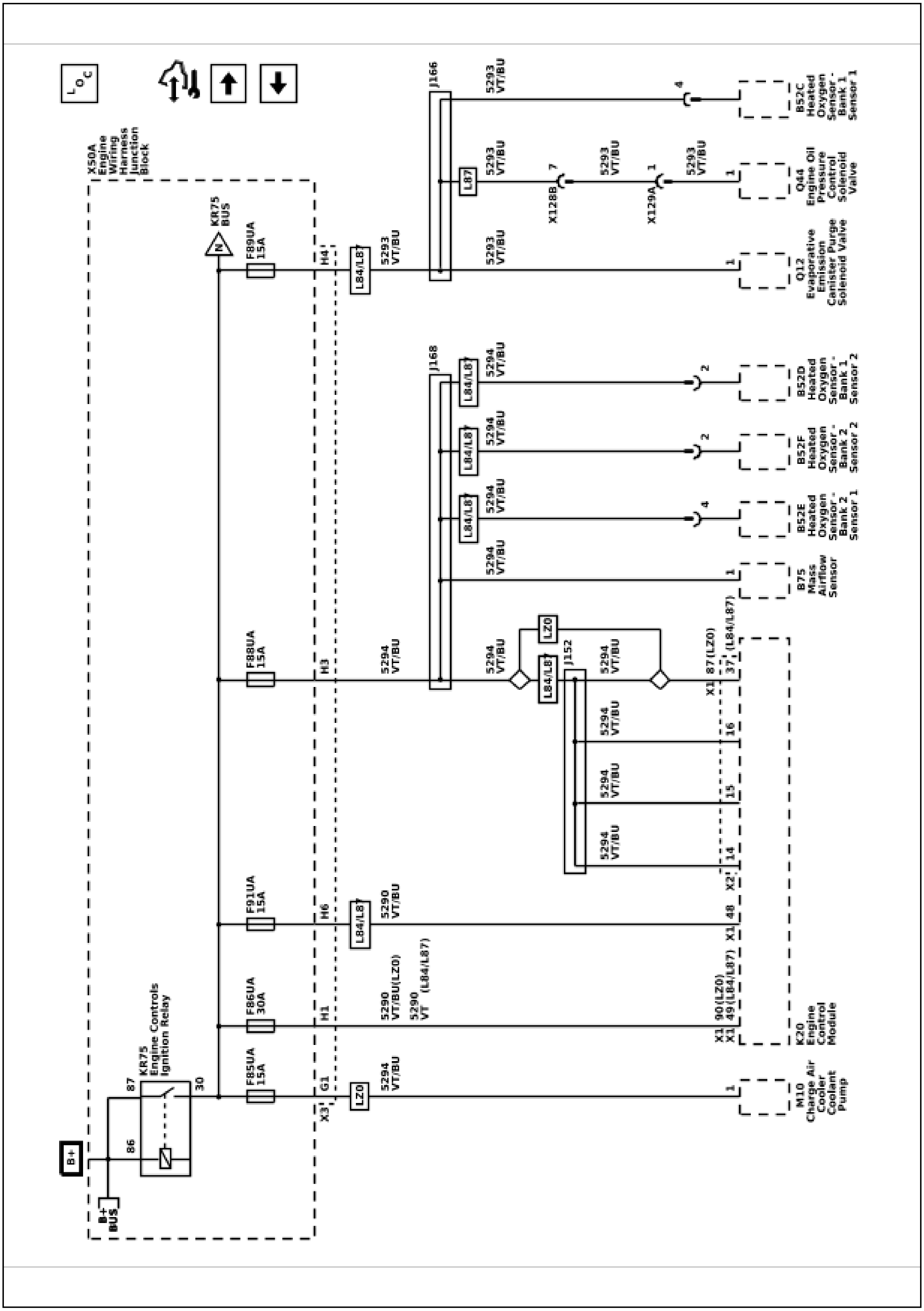

B+
B+ BUS
X50A Engine Wiring Harness Junction Block
KR200 Engine Controls Sensor Supply Voltage Relay
F80UA 20A
F60UA 10A
G5
C6
X3
4320 VT/GN
J372
J377
J186
X403 2
X400 50
4 B136 Exhaust Particulate Matter Sensor
1 B195C Nitrogen Oxides Sensor 3
1 B195B Nitrogen Oxides Sensor 2
16 K111 Fuel Pump Power Control Module
3 R29 Fuel Filter
4 T19 Multifunction Power Supply Converter
1 B195A Nitrogen Oxides Sensor 1

6885624

## Power Distribution Schematics (F74UA, F76UA, F78UA, F79UA, F82UA, F83UA, and F84UA Fuses)

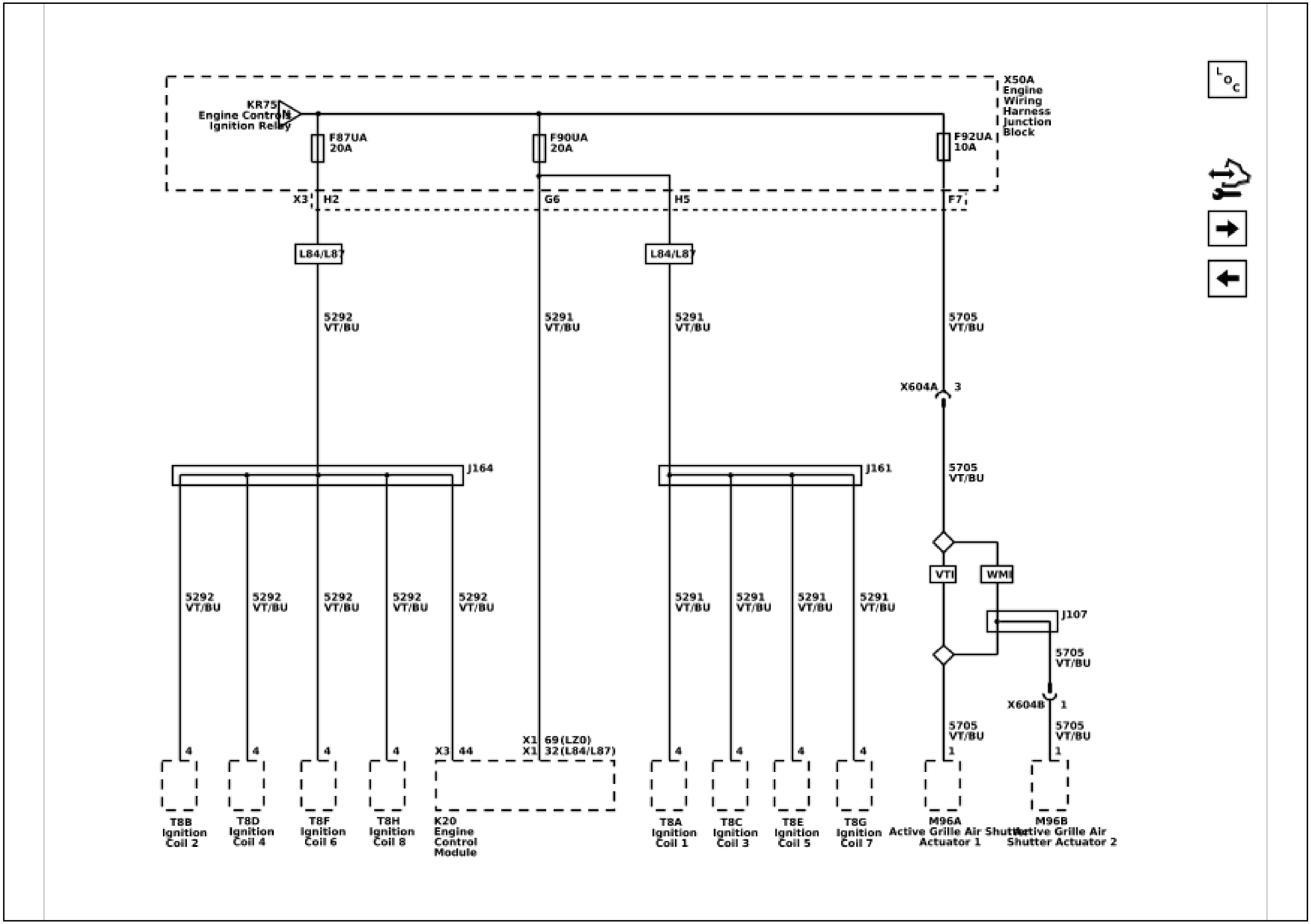

6885625
X50A Engine Wiring Harness Junction Block
B+
B+ BUS
F74UA 30A
G4
X4
UET
5840 RD/YE
38
F82UA 30A
H4
UET
5640 RD/VT
1
K68 Trailer Lamp Control Module
F84UA 30A
H6
UET
742 OG
X1 E
X88B Tow Vehicle Electrical Receptacle
F76UA 30A
G6
B3L
1142 RD/YE
X1 1
K4 Running Board Control Module
F83UA 30A
H5
1940 RD/VT
7
K111 Fuel Pump Power Control Module
F78UA 15A
F3
X3
440 RD/BN
X1 7 (LZ0)
X1 34 (L84/L87)
K20 Engine Control Module
F79UA 10A
F5
5940 RD/BN
2
G17 Heater Coolant Pump

## Power Distribution Schematics (F85UA, F86UA, F88UA, F89UA, and F91UA Fuses)

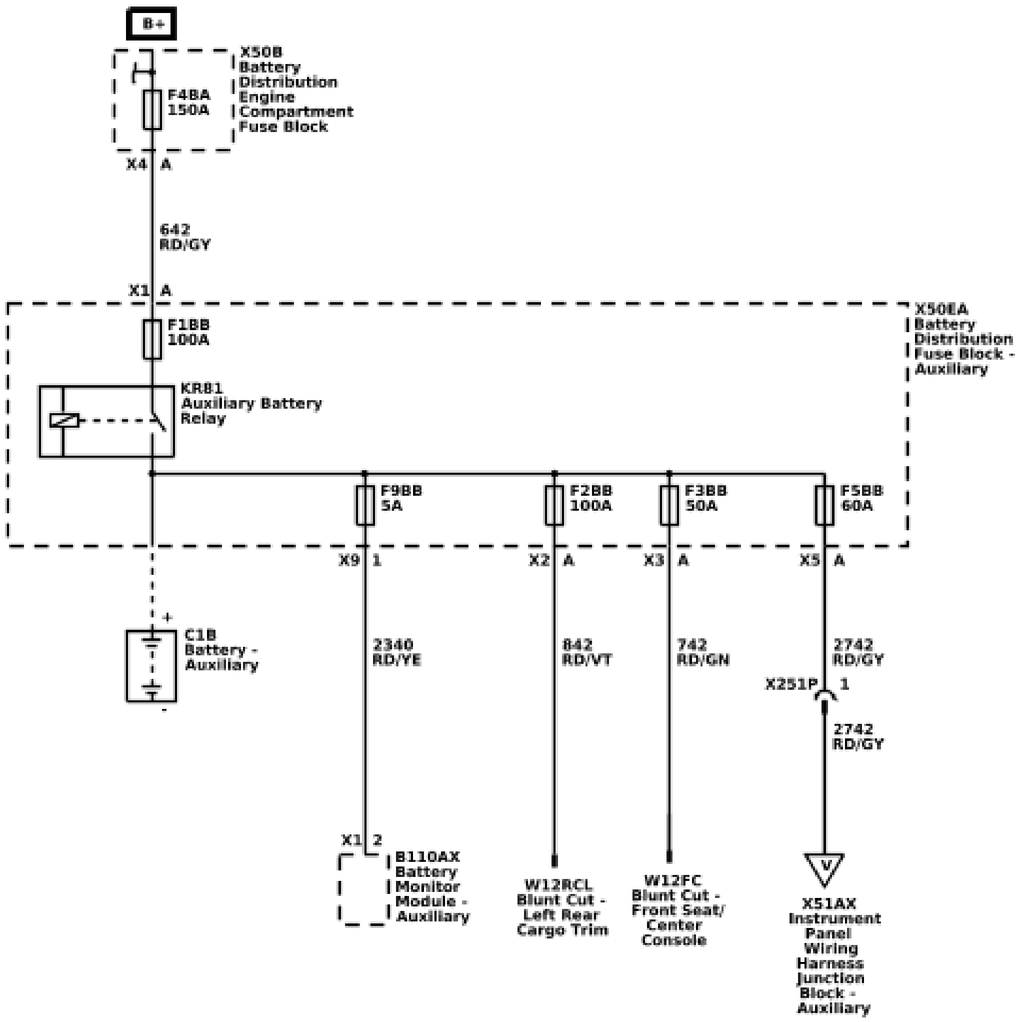

X50A Engine Wiring Harness Junction Block
B+
B+ BUS
KR75 Engine Controls Ignition Relay
87
86
30
KR75 BUS
F85UA 15A
F86UA 30A
F91UA 15A
F88UA 15A
F89UA 15A
X3
G1
H1
H6
H3
H4
LZ0
L84/L87
L87
5294 VT/BU
5290 VT/BU(LZ0)
5290 VT (L84/L87)
5290 VT/BU
5293 VT/BU
J166
J168
J152
X128B 7
X129A 1
X1 90(LZ0)
X1 49(L84/L87)
X1 48
X2 14
15
16
X1 87(LZ0)
37 (L84/L87)
1
2
4
M10 Charge Air Cooler Coolant Pump
K20 Engine Control Module
B75 Mass Airflow Sensor
B52E Heated Oxygen Sensor - Bank 2 Sensor 1
B52F Heated Oxygen Sensor - Bank 2 Sensor 2
B52D Heated Oxygen Sensor - Bank 1 Sensor 2
Q12 Evaporative Emission Canister Purge Solenoid Valve
Q44 Engine Oil Pressure Control Solenoid Valve
B52C Heated Oxygen Sensor - Bank 1 Sensor 1

6885626

## Power Distribution Schematics (F87UA, F90UA, and F92UA Fuses)

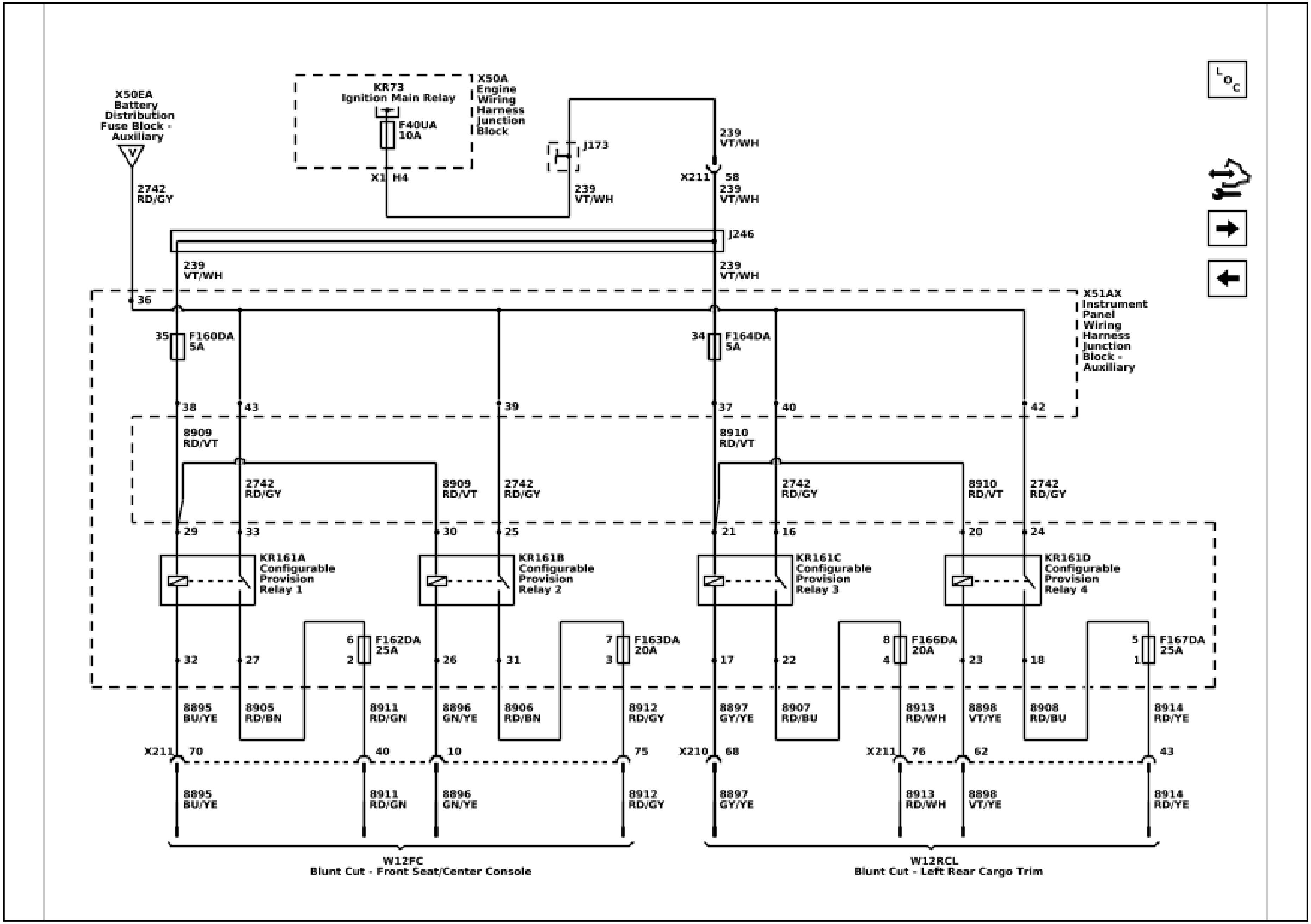

X50A
Engine
Wiring
Harness
Junction
Block
KR75
Engine Control
Ignition Relay
F87UA
20A
F90UA
20A
F92UA
10A
X3
H2
G6
H5
F7
L84/L87
L84/L87
5292
VT/BU
5291
VT/BU
5291
VT/BU
5705
VT/BU
X604A
3
5705
VT/BU
J164
J161
VTI
WMI
J107
5705
VT/BU
X604B
1
5292
VT/BU
5292
VT/BU
5292
VT/BU
5292
VT/BU
5292
VT/BU
5291
VT/BU
5291
VT/BU
5291
VT/BU
5291
VT/BU
5705
VT/BU
5705
VT/BU
4
4
4
4
X3 44
X1 69 (LZ0)
X1 32 (L84/L87)
4
4
4
4
1
1
T8B
Ignition
Coil 2
T8D
Ignition
Coil 4
T8F
Ignition
Coil 6
T8H
Ignition
Coil 8
K20
Engine
Control
Module
T8A
Ignition
Coil 1
T8C
Ignition
Coil 3
T8E
Ignition
Coil 5
T8G
Ignition
Coil 7
M96A
Active Grille Air Shutter
Actuator 1
M96B
Active Grille Air
Shutter Actuator 2
6885627

## Power Distribution Schematics (X50EA Battery Distribution Fuse Block - Auxiliary (5W4 / 9C1))


B+
X50B
Battery
Distribution
Engine
Compartment
Fuse Block
F4BA
150A
X4 A
642
RD/GY
X1 A
X50EA
Battery
Distribution
Fuse Block -
Auxiliary
F1BB
100A
KR81
Auxiliary Battery
Relay
F9BB
5A
F2BB
100A
F3BB
50A
F5BB
60A
X9 1
X2 A
X3 A
X5 A
+
C1B
Battery -
Auxiliary
-
2340
RD/YE
842
RD/VT
742
RD/GN
2742
RD/GY
X251P 1
2742
RD/GY
X1 2
B110AX
Battery
Monitor
Module -
Auxiliary
W12RCL
Blunt Cut -
Left Rear
Cargo Trim
W12FC
Blunt Cut -
Front Seat/
Center
Console
V
X51AX
Instrument
Panel
Wiring
Harness
Junction
Block -
Auxiliary

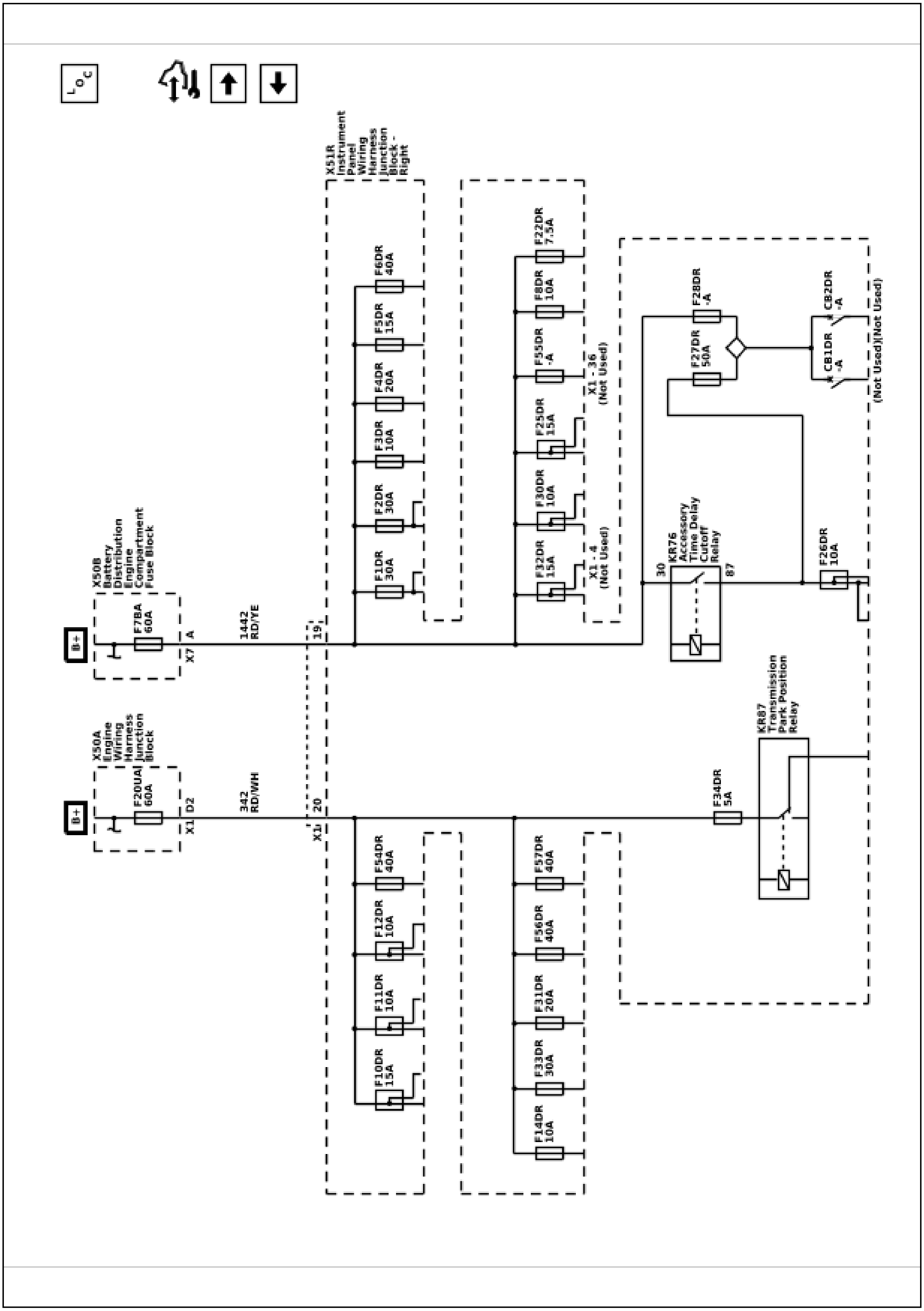
6885628

## Power Distribution Schematics (X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (5W4 / 9C1))

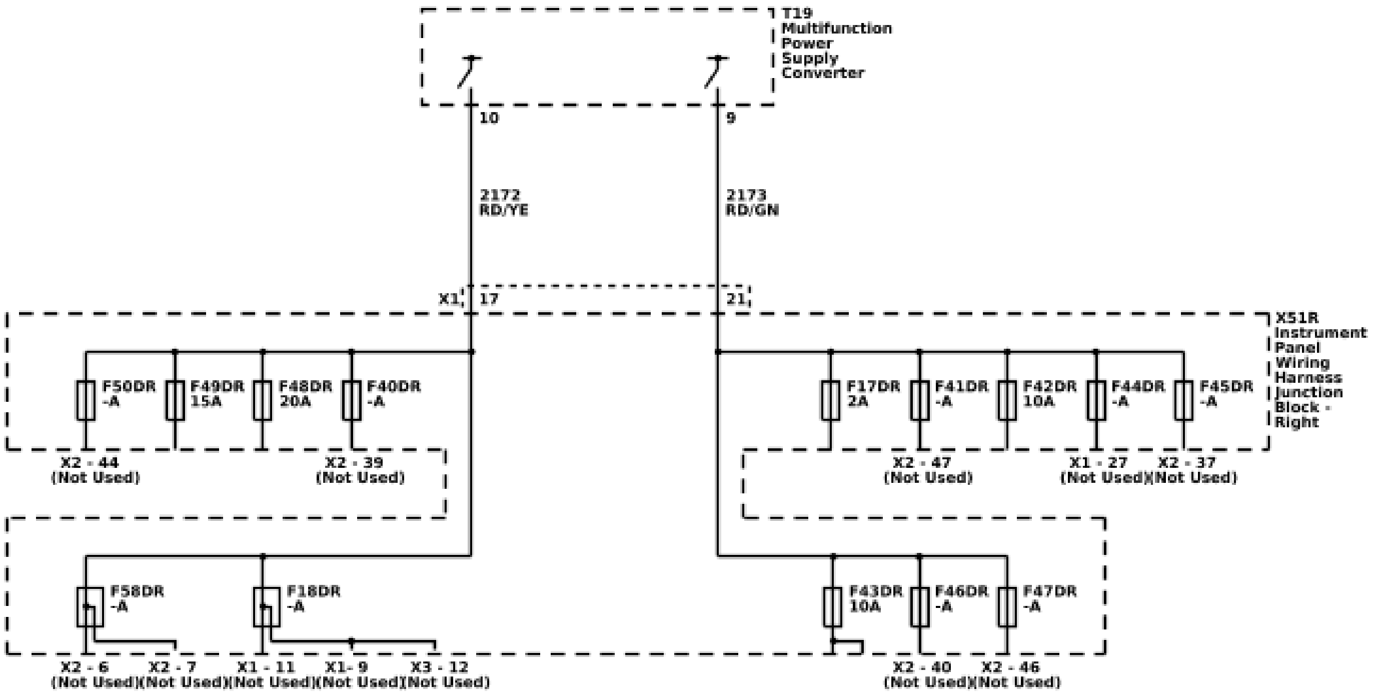

X50EA Battery Distribution Fuse Block - Auxiliary
V
2742 RD/GY
KR73 Ignition Main Relay
F40UA 10A
X50A Engine Wiring Harness Junction Block
X1 H4
J173
239 VT/WH
X211 58
J246
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
36
35 F160DA 5A
34 F164DA 5A
38
43
39
37
40
42
8909 RD/VT
8910 RD/VT
29
33
30
25
21
16
20
24
KR161A Configurable Provision Relay 1
KR161B Configurable Provision Relay 2
KR161C Configurable Provision Relay 3
KR161D Configurable Provision Relay 4
6 F162DA 25A 2
7 F163DA 20A 3
8 F166DA 20A 4
5 F167DA 25A 1
32
27
26
31
17
22
23
18
8895 BU/YE
8905 RD/BN
8911 RD/GN
8896 GN/YE
8906 RD/BN
8912 RD/GY
8897 GY/YE
8907 RD/BU
8913 RD/WH
8898 VT/YE
8908 RD/BU
8914 RD/YE
X211 70
40
10
75
X210 68
X211 76
62
43
W12FC Blunt Cut - Front Seat/Center Console
W12RCL Blunt Cut - Left Rear Cargo Trim

6885629

## Power Distribution Schematics (X51R Instrument Panel Wiring Harness Junction Block - Right - B+ Bussing 1 of 2)

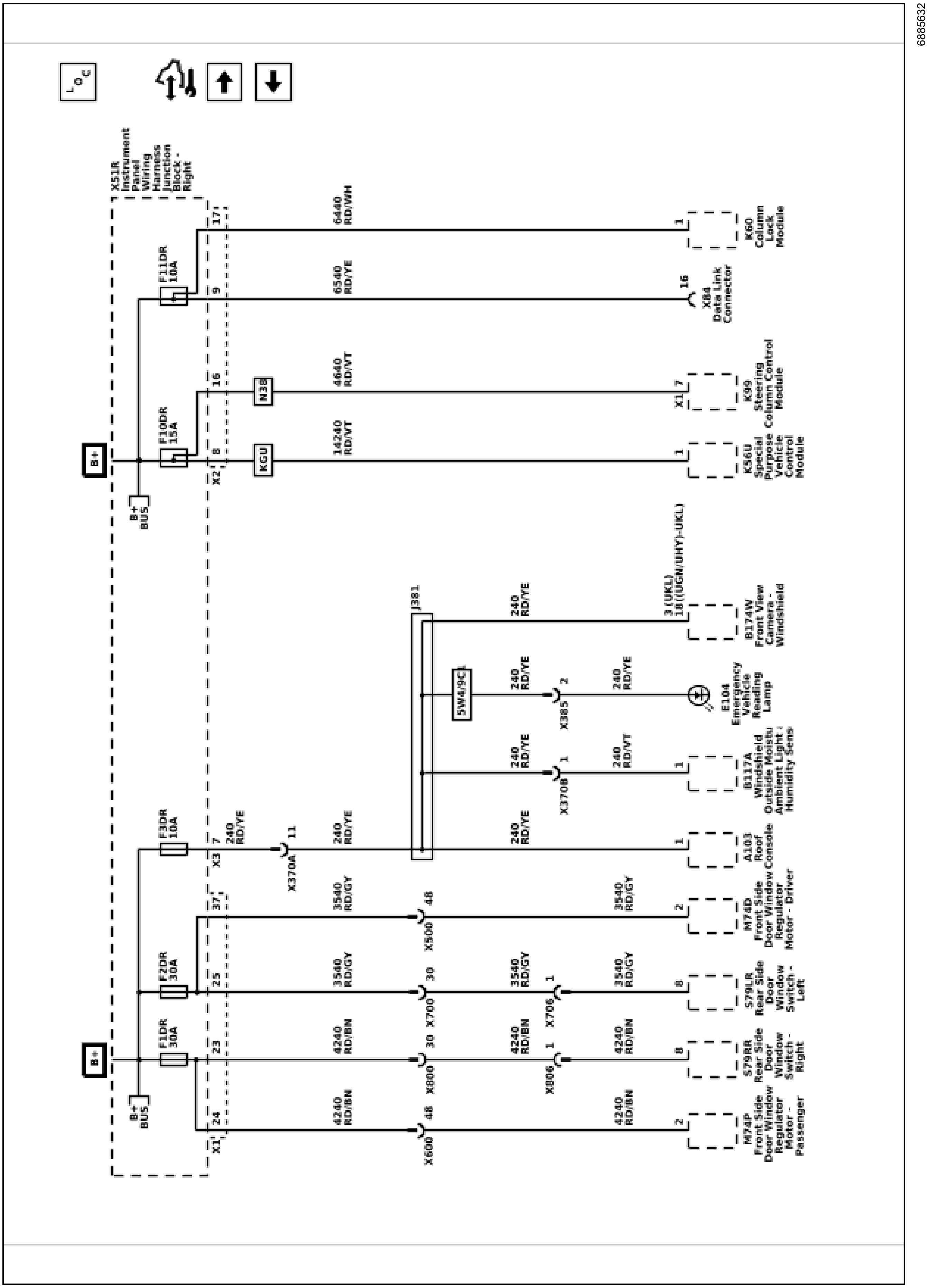

6885630
B+
F7BA 60A
X50B Battery Distribution Engine Compartment Fuse Block
X7 A
1442 RD/YE
19
B+
F20UA 60A
X50A Engine Wiring Harness Junction Block
X1 D2
342 RD/WH
20
X1
X51R Instrument Panel Wiring Harness Junction Block - Right
F1DR 30A
F2DR 30A
F3DR 10A
F4DR 20A
F5DR 15A
F6DR 40A
F32DR 15A
F30DR 10A
F25DR 15A
F55DR -A
F8DR 10A
F22DR 7.5A
X1 - 4 (Not Used)
X1 - 36 (Not Used)
30
KR76 Accessory Time Delay Cutoff Relay
87
F27DR 50A
F28DR -A
CB1DR -A
CB2DR -A
(Not Used)
(Not Used)
F26DR 10A
F10DR 15A
F11DR 10A
F12DR 10A
F54DR 40A
F14DR 10A
F33DR 30A
F31DR 20A
F56DR 40A
F57DR 40A
F34DR 5A
KR87 Transmission Park Position Relay

# Power Distribution Schematics (X51R Instrument Panel Wiring Harness Junction Block - Right - B+ Bussing 2 of 2)

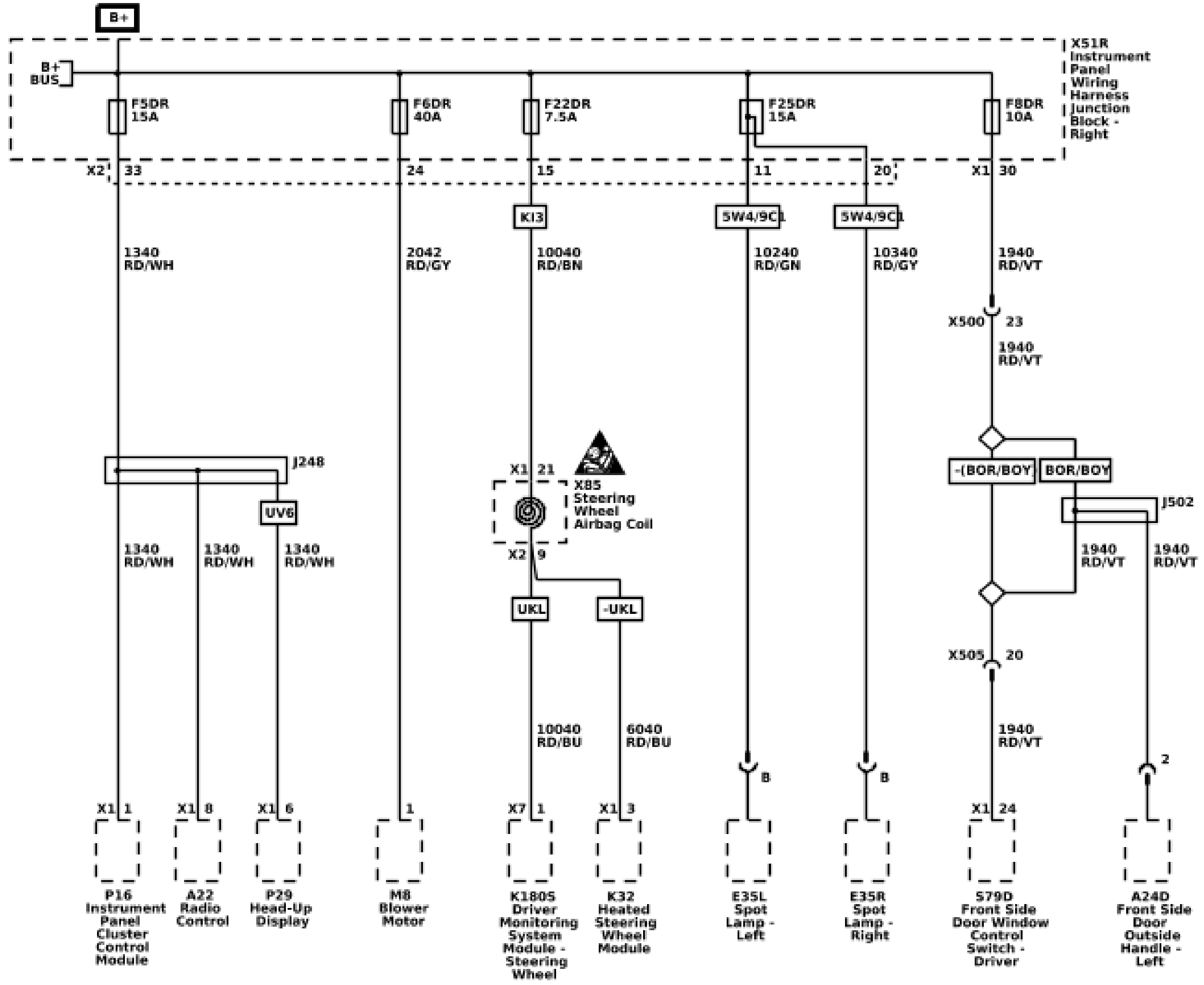

T19
Multifunction
Power
Supply
Converter
10
9
2172
RD/YE
2173
RD/GN
X1
17
21
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F50DR
-A
F49DR
15A
F48DR
20A
F40DR
-A
F17DR
2A
F41DR
-A
F42DR
10A
F44DR
-A
F45DR
-A
X2 - 44
(Not Used)
X2 - 39
(Not Used)
X2 - 47
(Not Used)
X1 - 27
(Not Used)
X2 - 37
(Not Used)
F58DR
-A
F18DR
-A
F43DR
10A
F46DR
-A
F47DR
-A
X2 - 6
(Not Used)
X2 - 7
(Not Used)
X1 - 11
(Not Used)
X1- 9
(Not Used)
X3 - 12
(Not Used)
X2 - 40
(Not Used)
X2 - 46
(Not Used)

6885631

## Power Distribution Schematics (F1DR, F2DR, F3DR, F10DR, and F11DR Fuses)

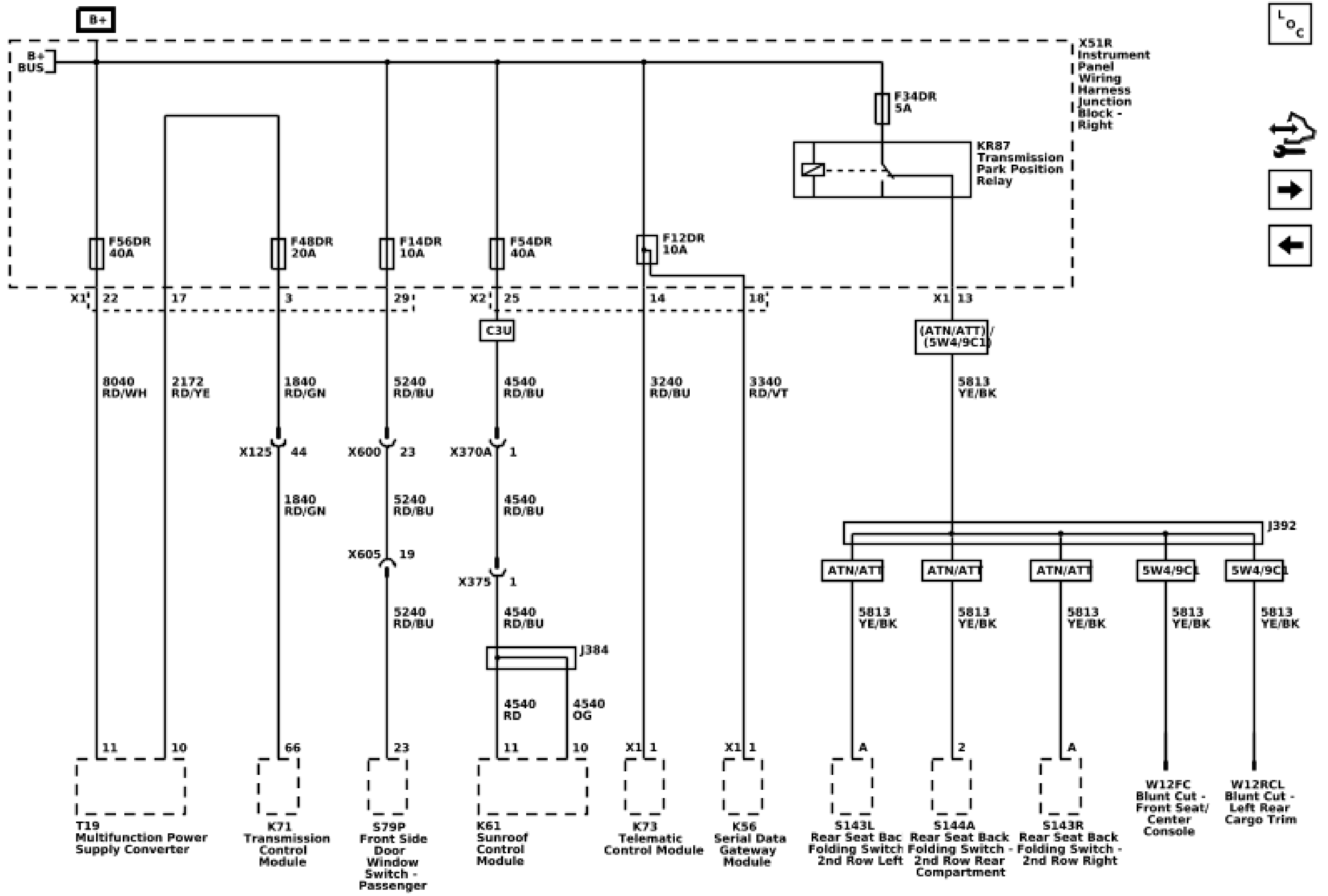

6885632
B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F1DR 30A
F2DR 30A
F3DR 10A
F10DR 15A
F11DR 10A
X1 24
23
25
37
X3 7
X2 8
16
9
17
240 RD/YE
X370A 11
4240 RD/BN
3540 RD/GY
240 RD/YE
14240 RD/VT
4640 RD/VT
6540 RD/YE
6440 RD/WH
KGU
N38
J381
5W4/9C
X600 48
X800 30
X700 30
X500 48
X806 1
X706 1
X3708 1
X385 2
240 RD/VT
M74P Front Side Door Window Regulator Motor - Passenger
S79RR Rear Side Door Window Switch - Right
S79LR Rear Side Door Window Switch - Left
M74D Front Side Door Window Regulator Motor - Driver
A103 Roof Console
B117A Windshield Outside Moistu Ambient Light : Humidity Sens
E104 Emergency Vehicle Reading Lamp
B174W Front View Camera - Windshield
3 (UKL)
18((UGN/UHY)-UKL)
K36U Special Purpose Vehicle Control Module
K99 Steering Column Control Module
X1 7
X84 Data Link Connector
K60 Column Lock Module
2
8
1

## Power Distribution Schematics (F5DR, F6DR, F8DR, F22DR, and F25DR Fuses)


B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F5DR 15A
F6DR 40A
F22DR 7.5A
F25DR 15A
F8DR 10A
X2 33
24
15
11
20
X1 30
KI3
5W4/9C1
5W4/9C1
1340 RD/WH
2042 RD/GY
10040 RD/BN
10240 RD/GN
10340 RD/GY
1940 RD/VT
X500 23
1940 RD/VT
J248
UV6
1340 RD/WH
1340 RD/WH
1340 RD/WH
X1 21
X85 Steering Wheel Airbag Coil
X2 9
UKL
-UKL
10040 RD/BU
6040 RD/BU
-(BOR/BOY
BOR/BOY
J502
1940 RD/VT
1940 RD/VT
X505 20
1940 RD/VT
B
B
2
X1 1
X1 8
X1 6
1
X7 1
X1 3
X1 24
P16 Instrument Panel Cluster Control Module
A22 Radio Control
P29 Head-Up Display
M8 Blower Motor
K180S Driver Monitoring System Module - Steering Wheel
K32 Heated Steering Wheel Module
E35L Spot Lamp - Left
E35R Spot Lamp - Right
S79D Front Side Door Window Control Switch - Driver
A24D Front Side Door Outside Handle - Left

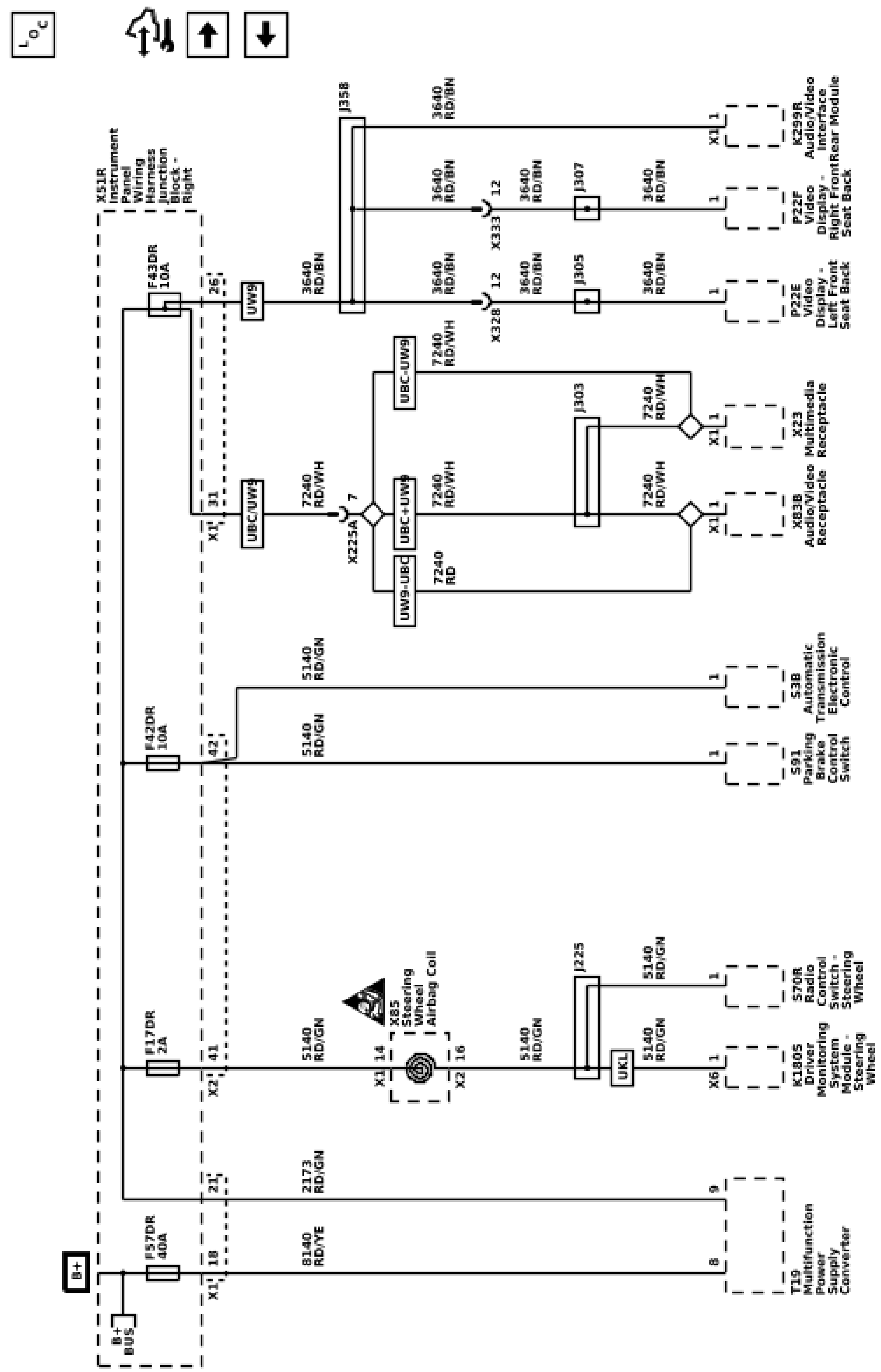
6885633

## Power Distribution Schematics (F12DR, F14DR, F34DR, F48DR, F54DR, and F56DR Fuses)

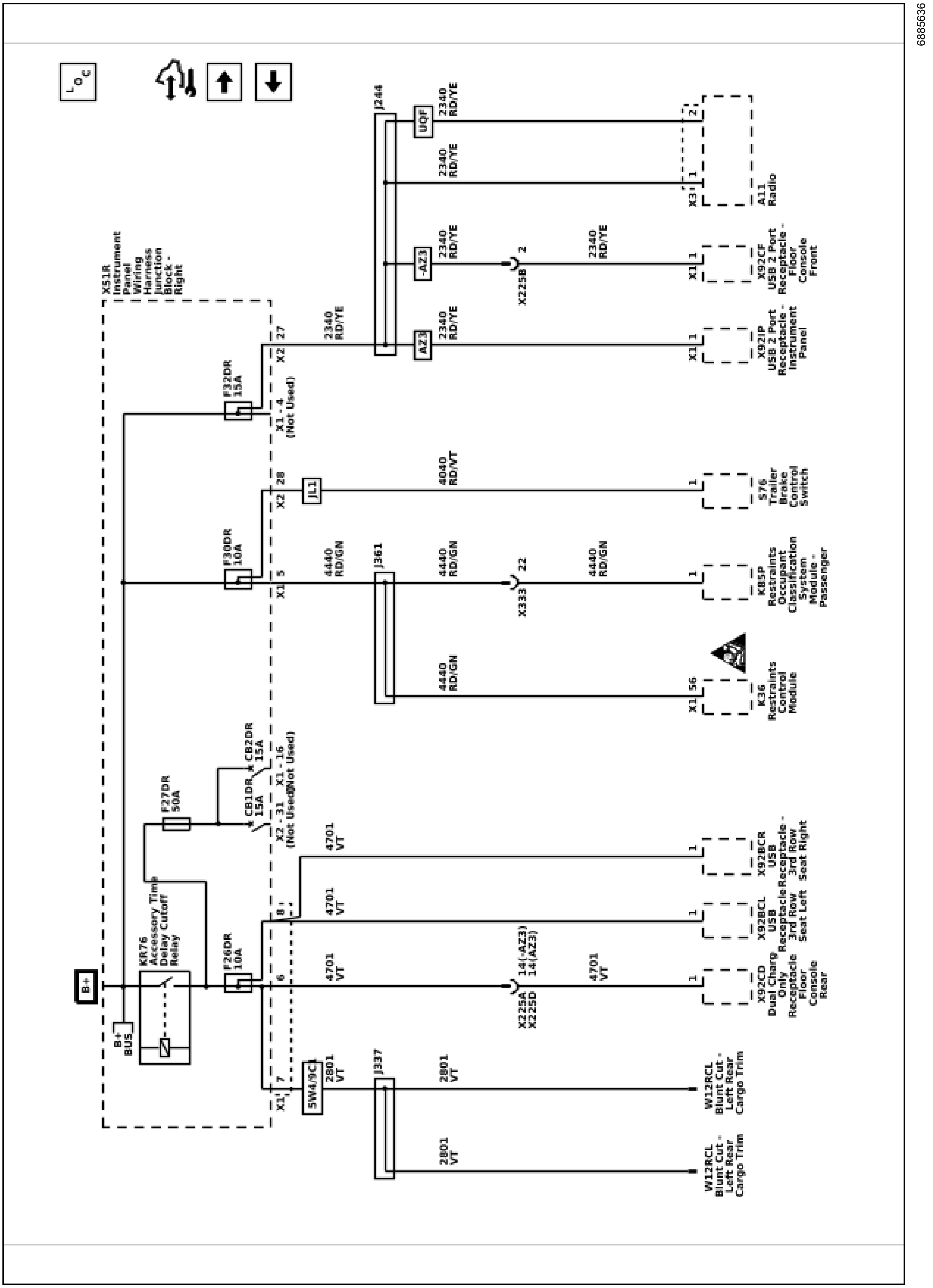

B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F34DR 5A
KR87 Transmission Park Position Relay
F56DR 40A
F48DR 20A
F14DR 10A
F54DR 40A
F12DR 10A
X1 22
17
3
29
X2 25
14
18
X1 13
C3U
(ATN/ATT)/ (5W4/9C1)
8040 RD/WH
2172 RD/YE
1840 RD/GN
5240 RD/BU
4540 RD/BU
3240 RD/BU
3340 RD/VT
5813 YE/BK
X125 44
X600 23
X370A 1
X605 19
X375 1
J392
J384
4540 RD
4540 OG
ATN/ATT
5W4/9C1
11
10
66
23
11
10
X1 1
X1 1
A
2
A
T19 Multifunction Power Supply Converter
K71 Transmission Control Module
S79P Front Side Door Window Switch - Passenger
K61 Sunroof Control Module
K73 Telematic Control Module
K56 Serial Data Gateway Module
S143L Rear Seat Bac Folding Switch 2nd Row Left
S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment
S143R Rear Seat Back Folding Switch - 2nd Row Right
W12FC Blunt Cut - Front Seat/ Center Console
W12RCL Blunt Cut - Left Rear Cargo Trim

6885634

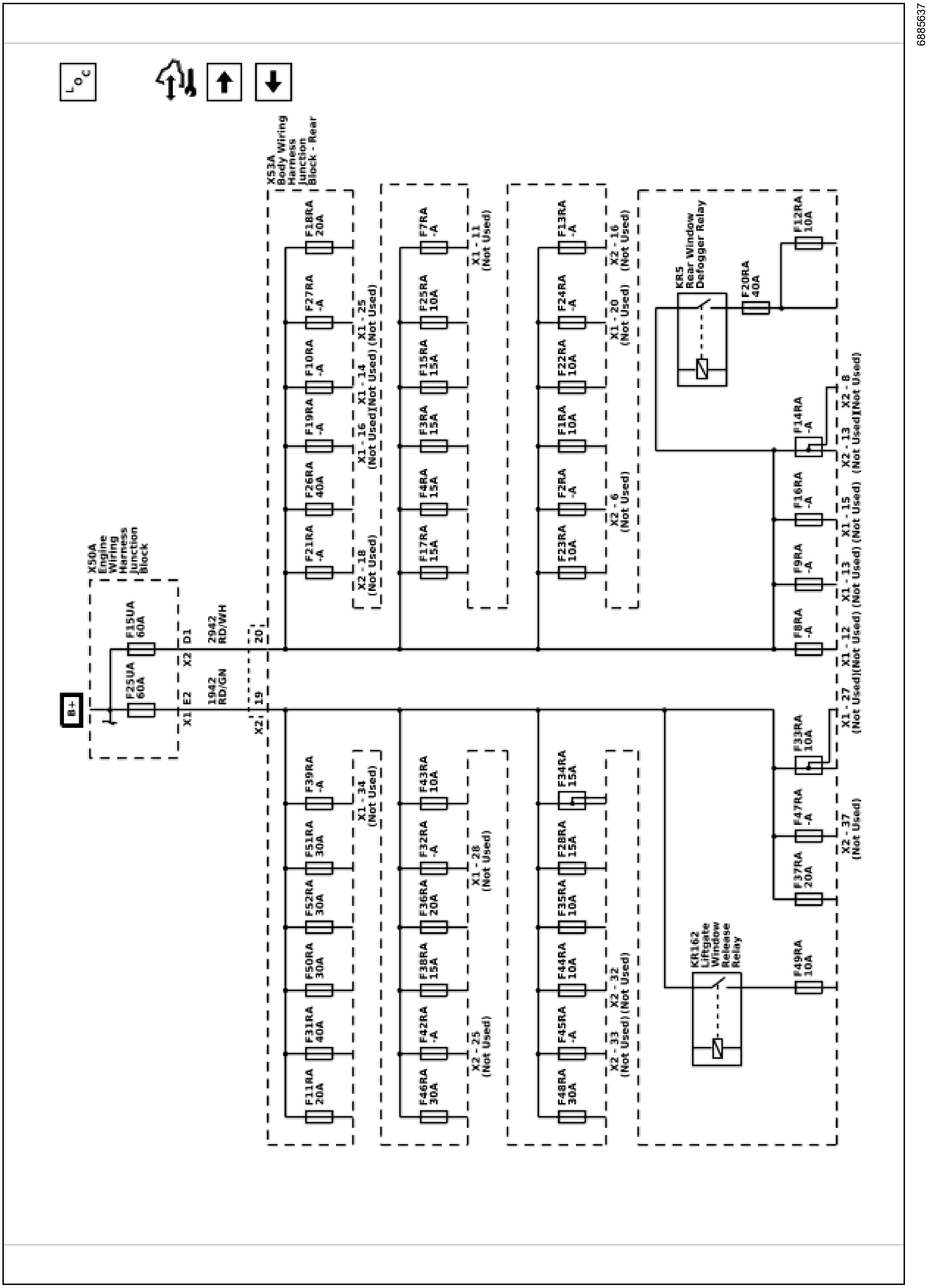
## Power Distribution Schematics (F17DR, F42DR, F43DR, and F57DR Fuses)


6885635
B+
B+ BUS
X51R Instrument Panel Wiring Harness Junction Block - Right
F57DR 40A
F17DR 2A
F42DR 10A
F43DR 10A
X1 18
21
X2 41
42
X1 31
26
8140 RD/YE
2173 RD/GN
5140 RD/GN
7240 RD/WH
3640 RD/BN
7240 RD
UW9
UBC/UW9
UBC+UW9
UBC-UW9
UW9-UBC
UKL
X225A 7
X328 12
X333 12
J225
J303
J305
J307
J358
X85 Steering Wheel Airbag Coil
X1 14
X2 16
8
9
T19 Multifunction Power Supply Converter
X6 1
K180S Driver Monitoring System Module - Steering Wheel
S70R Radio Control Switch - Steering Wheel
S91 Parking Brake Control Switch
S3B Automatic Transmission Electronic Control
X83B Audio/Video Receptacle
X23 Multimedia Receptacle
P22E Video Display - Left Front Seat Back
P22F Video Display - Right Front Seat Back
K299R Audio/Video Interface Rear Module

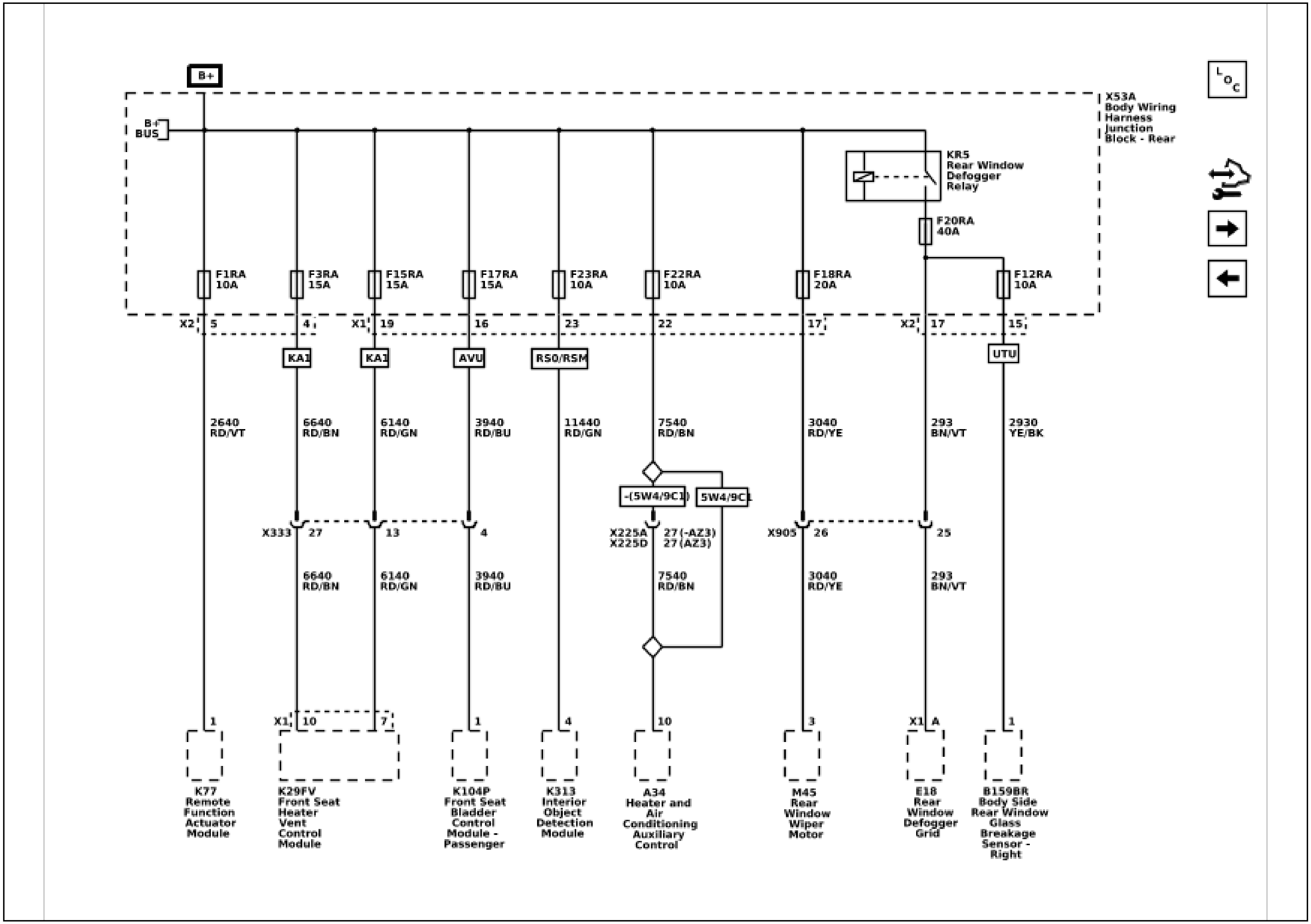
## Power Distribution Schematics (F30DR and F32DR Fuses)


6885636
X51R Instrument Panel Wiring Harness Junction Block - Right
B+
B+ BUS
KR76 Accessory Time Delay Cutoff Relay
F27DR 50A
CB1DR 15A
X2 - 31 (Not Used)
CB2DR 15A
X1 - 16 (Not Used)
F26DR 10A
X1 7
6
8
F30DR 10A
X1 5
X2 28
F32DR 15A
X1 - 4 (Not Used)
X2 27
5W4/9C
2801 VT
J337
2801 VT
2801 VT
4701 VT
4701 VT
4701 VT
4701 VT
X225A X225D 14(-AZ3) 14(AZ3)
4440 RD/GN
J361
4440 RD/GN
X333 22
4440 RD/GN
4440 RD/GN
JL1
4040 RD/VT
2340 RD/YE
J244
AZ3
2340 RD/YE
-AZ3
2340 RD/YE
X225B 2
2340 RD/YE
2340 RD/YE
UQF
2340 RD/YE
W12RCL Blunt Cut - Left Rear Cargo Trim
W12RCL Blunt Cut - Left Rear Cargo Trim
1
X92CD Dual Charg Only Receptacle Floor Console Rear
1
X92BCL USB Receptacle 3rd Row Seat Left
1
X92BCR USB Receptacle - 3rd Row Seat Right
X1 56
K36 Restraints Control Module
1
K85P Restraints Occupant Classification System Module - Passenger
1
S76 Trailer Brake Control Switch
X1 1
X92IP USB 2 Port Receptacle - Instrument Panel
X1 1
X92CF USB 2 Port Receptacle - Floor Console Front
X3 1 2
A11 Radio

# Power Distribution Schematics (X53A Body Wiring Harness Junction Block - Rear B+ Bus)

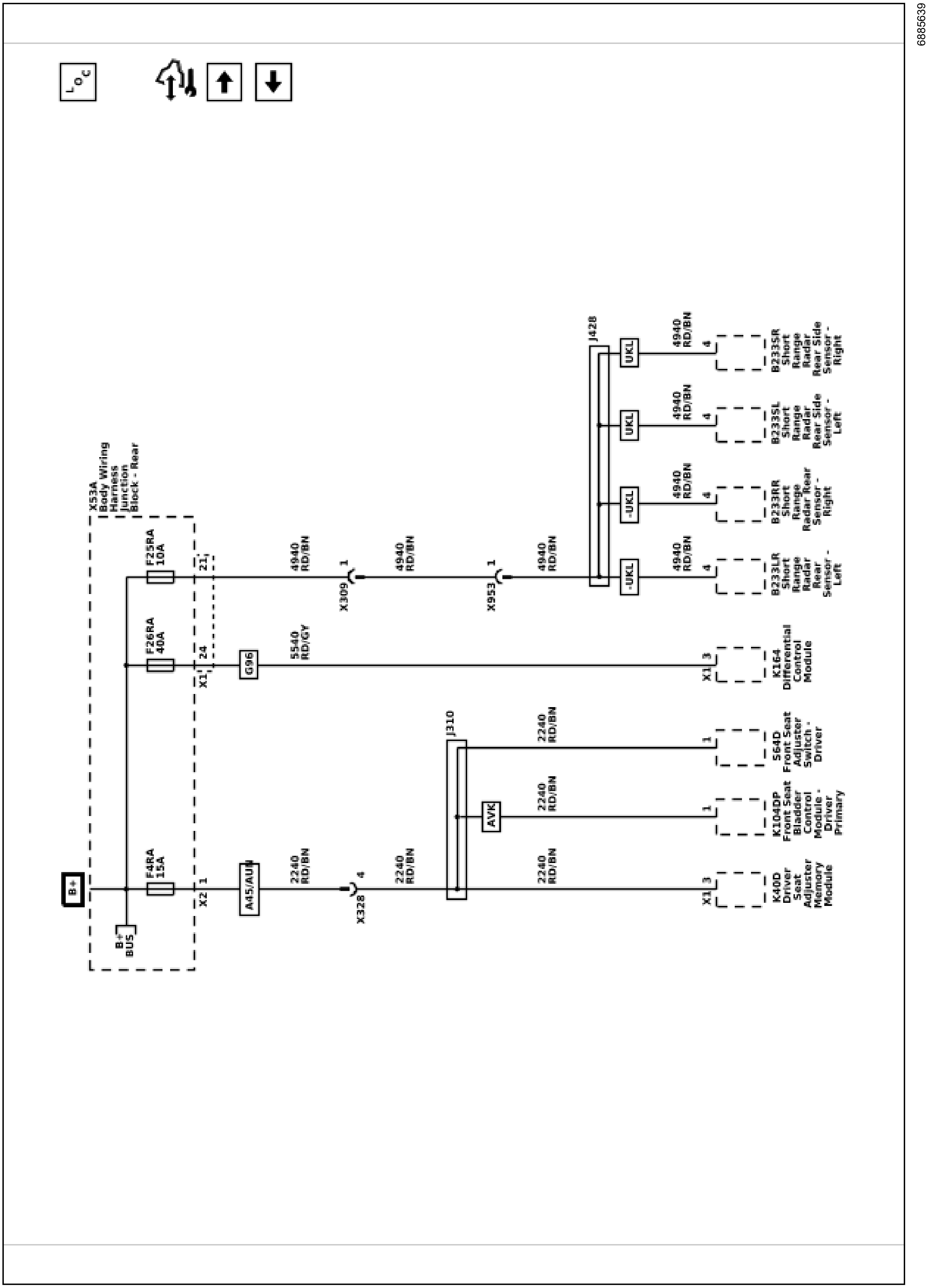

6885637
B+
X50A Engine Wiring Harness Junction Block
F25UA 60A
F15UA 60A
X1 E2
X2 D1
1942 RD/GN
2942 RD/WH
X2 19
20
X53A Body Wiring Harness Junction Block - Rear
F18RA 20A
F27RA -A
F10RA -A
F19RA -A
F26RA 40A
F21RA -A
X1 - 25 (Not Used)
X1 - 14 (Not Used)
X1 - 16 (Not Used)
X2 - 18 (Not Used)
F7RA -A
F25RA 10A
F15RA 15A
F3RA 15A
F4RA 15A
F17RA 15A
X1 - 11 (Not Used)
F13RA -A
F24RA -A
F22RA 10A
F1RA 10A
F2RA -A
F23RA 10A
X2 - 16 (Not Used)
X1 - 20 (Not Used)
X2 - 6 (Not Used)
KR5 Rear Window Defogger Relay
F20RA 40A
F12RA 10A
F14RA -A
F16RA -A
F9RA -A
F8RA -A
X2 - 8 (Not Used)
X2 - 13 (Not Used)
X1 - 15 (Not Used)
X1 - 13 (Not Used)
X1 - 12 (Not Used)
F39RA -A
F51RA 30A
F52RA 30A
F50RA 30A
F31RA 40A
F11RA 20A
X1 - 34 (Not Used)
F43RA 10A
F32RA -A
F36RA 20A
F38RA 15A
F42RA -A
F46RA 30A
X1 - 28 (Not Used)
X2 - 25 (Not Used)
F34RA 15A
F28RA 15A
F35RA 10A
F44RA 10A
F45RA -A
F48RA 30A
X2 - 32 (Not Used)
X2 - 33 (Not Used)
X1 - 27 (Not Used)
F33RA 10A
F47RA -A
F37RA 20A
X2 - 37 (Not Used)
KR162 Liftgate Window Release Relay
F49RA 10A

## Power Distribution Schematics (F1RA, F3RA, F12RA, F15RA, F17RA,F18RA, F20RA, F22RA, and F23RA Fuses)

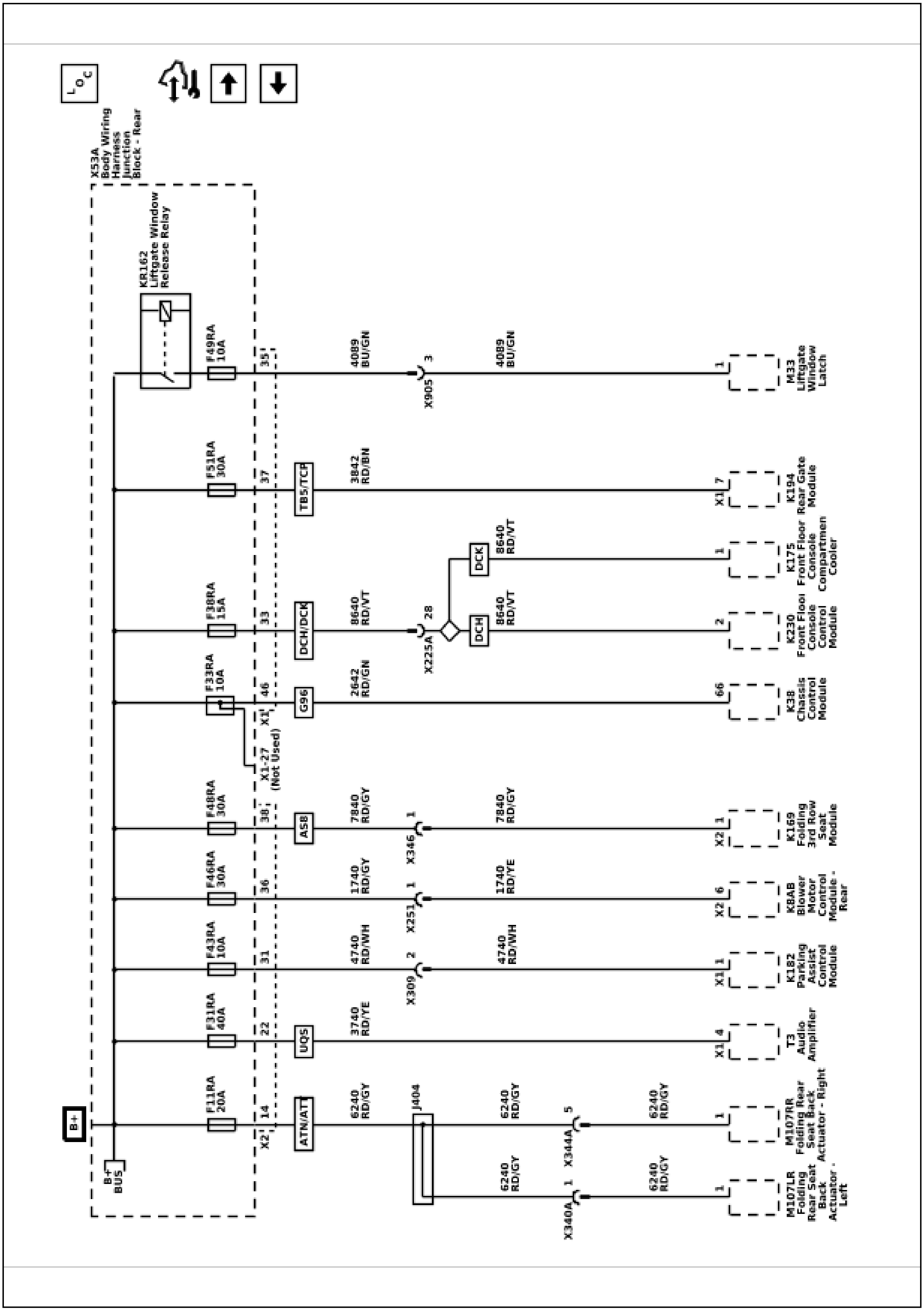

B+
B+ BUS
X53A Body Wiring Harness Junction Block - Rear
KR5 Rear Window Defogger Relay
F20RA 40A
F1RA 10A
F3RA 15A
F15RA 15A
F17RA 15A
F23RA 10A
F22RA 10A
F18RA 20A
F12RA 10A
X2 5
4
X1 19
16
23
22
17
X2 17
15
KA1
KA1
AVU
RS0/RSM
UTU
2640 RD/VT
6640 RD/BN
6140 RD/GN
3940 RD/BU
11440 RD/GN
7540 RD/BN
3040 RD/YE
293 BN/VT
2930 YE/BK
-(5W4/9C1)
5W4/9C1
X333 27
13
4
X225A X225D 27 (-AZ3) 27 (AZ3)
X905 26
25
6640 RD/BN
6140 RD/GN
3940 RD/BU
7540 RD/BN
3040 RD/YE
293 BN/VT
1
X1 10
7
1
4
10
3
X1 A
1
K77 Remote Function Actuator Module
K29FV Front Seat Heater Vent Control Module
K104P Front Seat Bladder Control Module - Passenger
K313 Interior Object Detection Module
A34 Heater and Air Conditioning Auxiliary Control
M45 Rear Window Wiper Motor
E18 Rear Window Defogger Grid
B159BR Body Side Rear Window Glass Breakage Sensor - Right
L O C

6885638

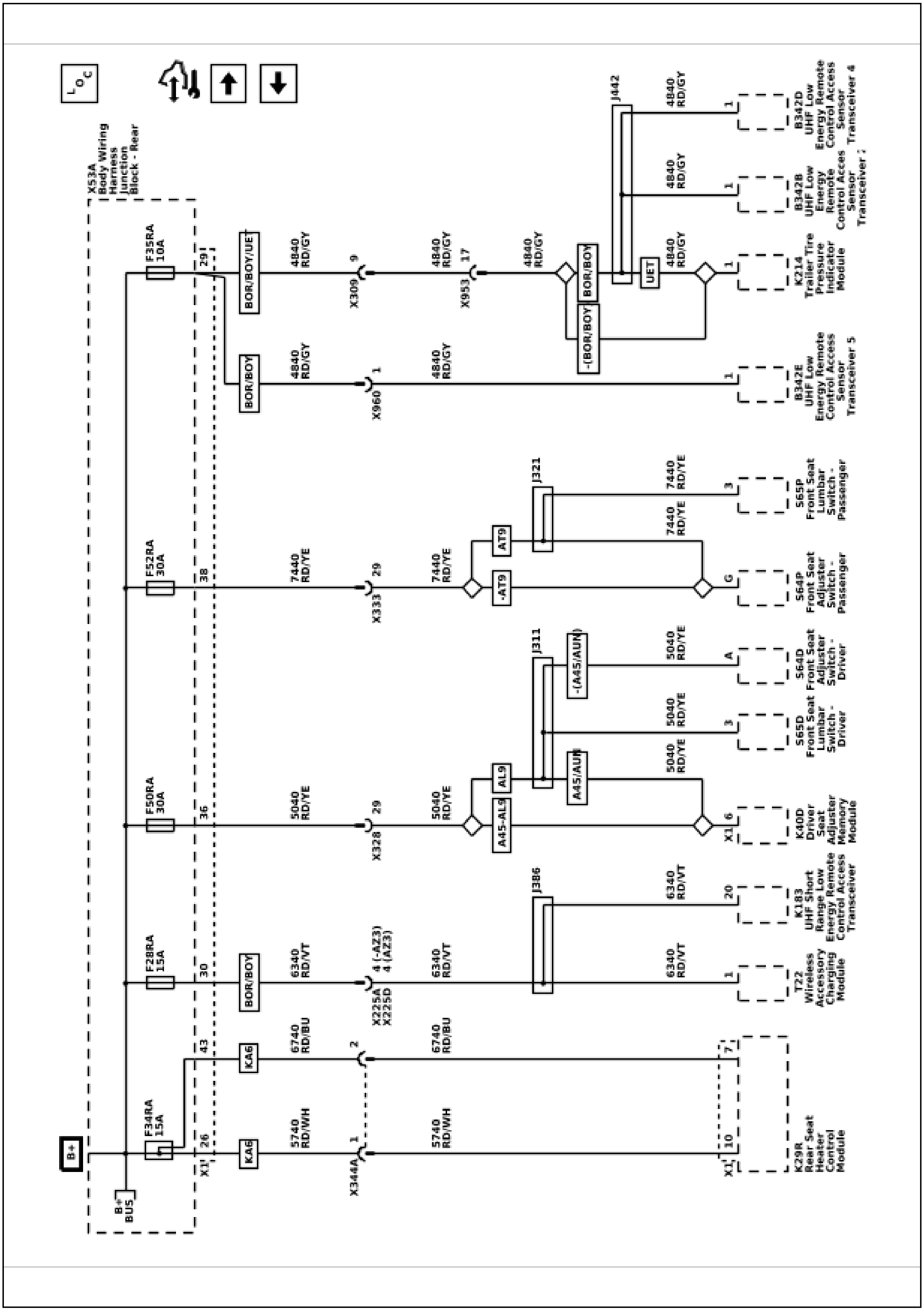
## Power Distribution Schematics (F4RA, F25RA, and F26RA Fuses)


6885639
B+
B+ BUS
X53A Body Wiring Harness Junction Block - Rear
F4RA 15A
F26RA 40A
F25RA 10A
X2 1
X1 24
21
A45/AUN
G96
2240 RD/BN
5540 RD/GY
4940 RD/BN
X328 4
X309 1
X953 1
J310
AVK
J428
-UKL
UKL
X1 3
1
4
K40D Driver Seat Adjuster Memory Module
K104DP Front Seat Bladder Control Module - Driver Primary
S64D Front Seat Adjuster Switch - Driver
K164 Differential Control Module
B233LR Short Range Radar Rear Sensor - Left
B233RR Short Range Radar Rear Sensor - Right
B233SL Short Range Radar Rear Side Sensor - Left
B233SR Short Range Radar Rear Side Sensor - Right

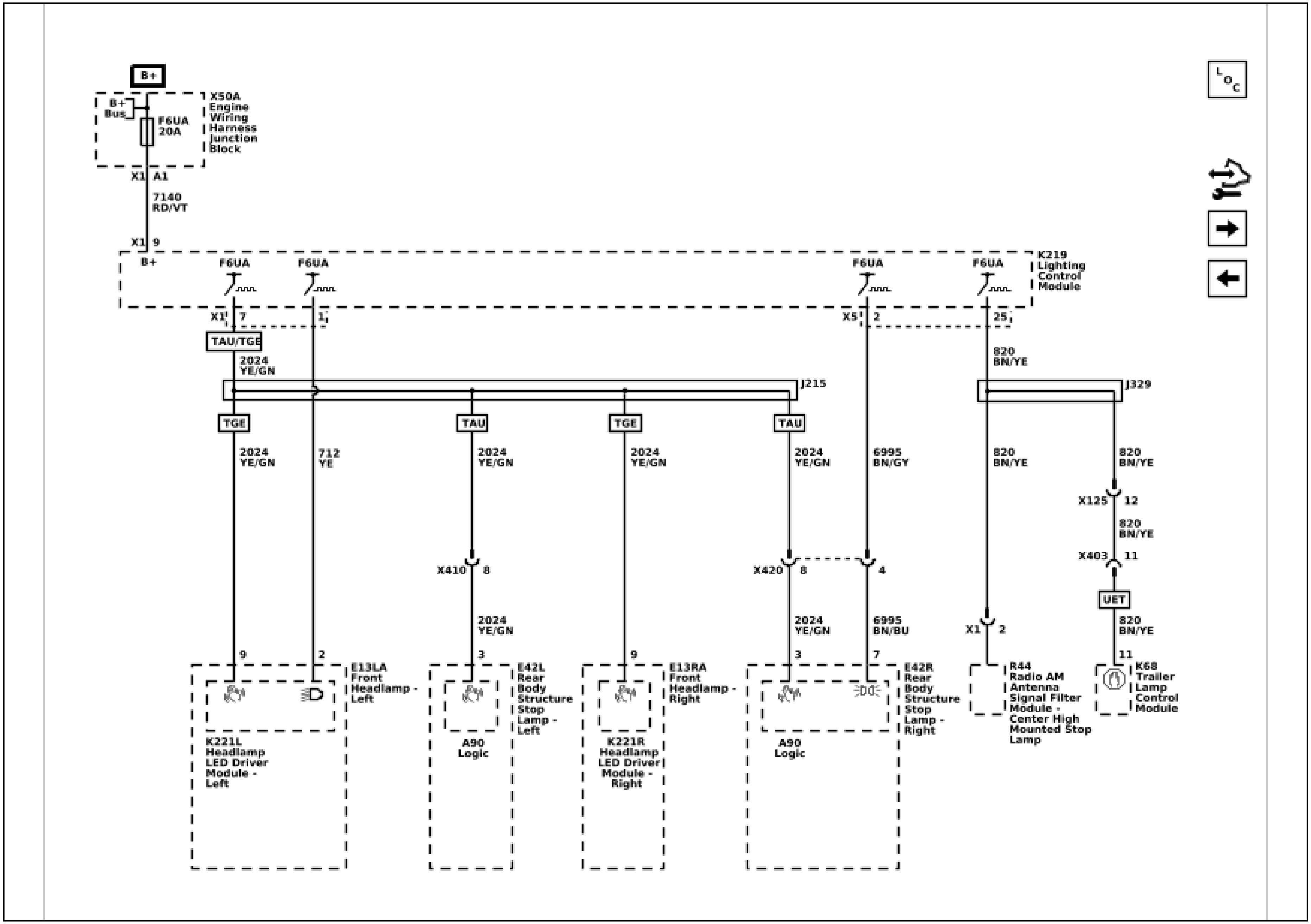
## Power Distribution Schematics (F11RA, F31RA, F33RA, F38RA, F43RA, F46RA, F48RA, F49RA, and F51RA Fuses)


6885640
X53A Body Wiring Harness Junction Block - Rear
KR162 Liftgate Window Release Relay
B+
B+ BUS
F11RA 20A
F31RA 40A
F43RA 10A
F46RA 30A
F48RA 30A
F33RA 10A
F38RA 15A
F51RA 30A
F49RA 10A
X2 14
22
31
36
38
X1 46
X1-27 (Not Used)
33
37
35
ATN/ATT
UQS
AS8
G96
DCH/DCK
TB5/TCP
6240 RD/GY
3740 RD/YE
4740 RD/WH
1740 RD/GY
1740 RD/YE
7840 RD/GY
2642 RD/GN
8640 RD/VT
3842 RD/BN
4089 BU/GN
J404
X344A 5
X340A 1
X309 2
X251 1
X346 1
X225A 28
DCH
DCK
X905 3
1
X1 4
X1 1
X2 6
X2 1
66
2
1
X1 7
1
M107LR Folding Rear Seat Back Actuator - Left
M107RR Folding Rear Seat Back Actuator - Right
T3 Audio Amplifier
K182 Parking Assist Control Module
K8AB Blower Motor Control Module - Rear
K169 Folding 3rd Row Seat Module
K38 Chassis Control Module
K230 Front Floor Console Control Module
K175 Front Floor Console Compartmen Cooler
K194 Rear Gate Module
M33 Liftgate Window Latch

## Power Distribution Schematics (F28RA, F34RA, F35RA, F50RA and F52RA Fuses)

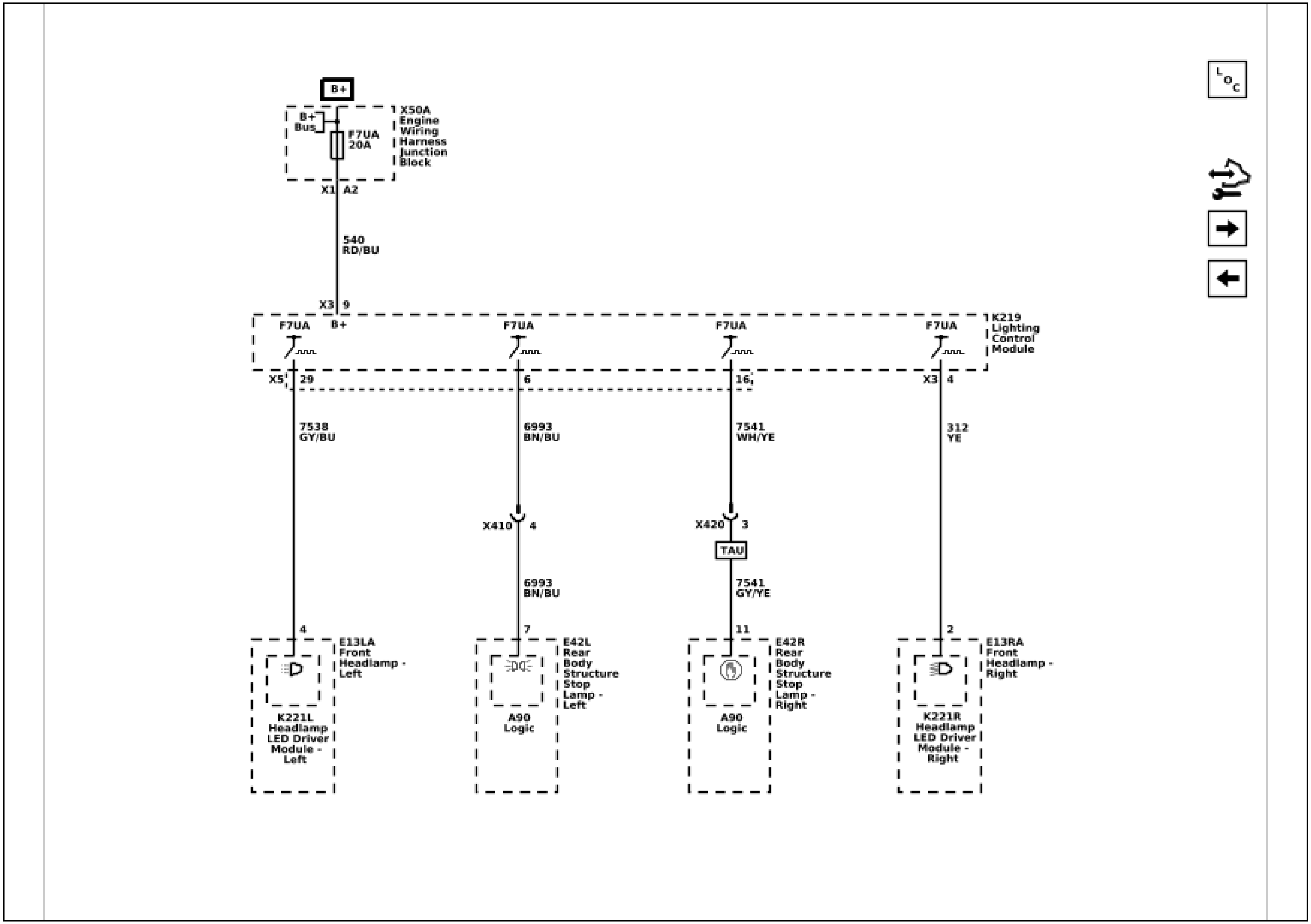

6885641
X53A Body Wiring Harness Junction Block - Rear
B+
B+ BUS
F34RA 15A
F28RA 15A
F50RA 30A
F52RA 30A
F35RA 10A
X1 26
43
30
36
38
29
KA6
KA6
BOR/BOY
BOR/BOY
BOR/BOY/UET
5740 RD/WH
6740 RD/BU
6340 RD/VT
5040 RD/YE
7440 RD/YE
4840 RD/GY
X344A 1
2
X225A 4 (-AZ3)
X225D 4 (AZ3)
X328 29
X333 29
X960 1
X309 9
X953 17
A45-AL9
AL9
A45/AUN
-(A45/AUN)
-AT9
AT9
-(BOR/BOY)
BOR/BOY
UET
J386
J311
J321
J442
X1 10
7
K29R Rear Seat Heater Control Module
1
T22 Wireless Accessory Charging Module
20
K183 UHF Short Range Low Energy Remote Control Access Transceiver
X1 6
K40D Driver Seat Adjuster Memory Module
3
S65D Front Seat Lumbar Switch - Driver
A
S64D Front Seat Adjuster Switch - Driver
G
S64P Front Seat Adjuster Switch - Passenger
3
S65P Front Seat Lumbar Switch - Passenger
1
B342E UHF Low Energy Remote Control Access Sensor Transceiver 5
1
K214 Trailer Tire Pressure Indicator Module
1
B342B UHF Low Energy Remote Control Access Sensor Transceiver 2
1
B342D UHF Low Energy Remote Control Access Sensor Transceiver 4

## Power Distribution Schematics (F6UA Fuse and Lighting Control Module Fused Outputs)

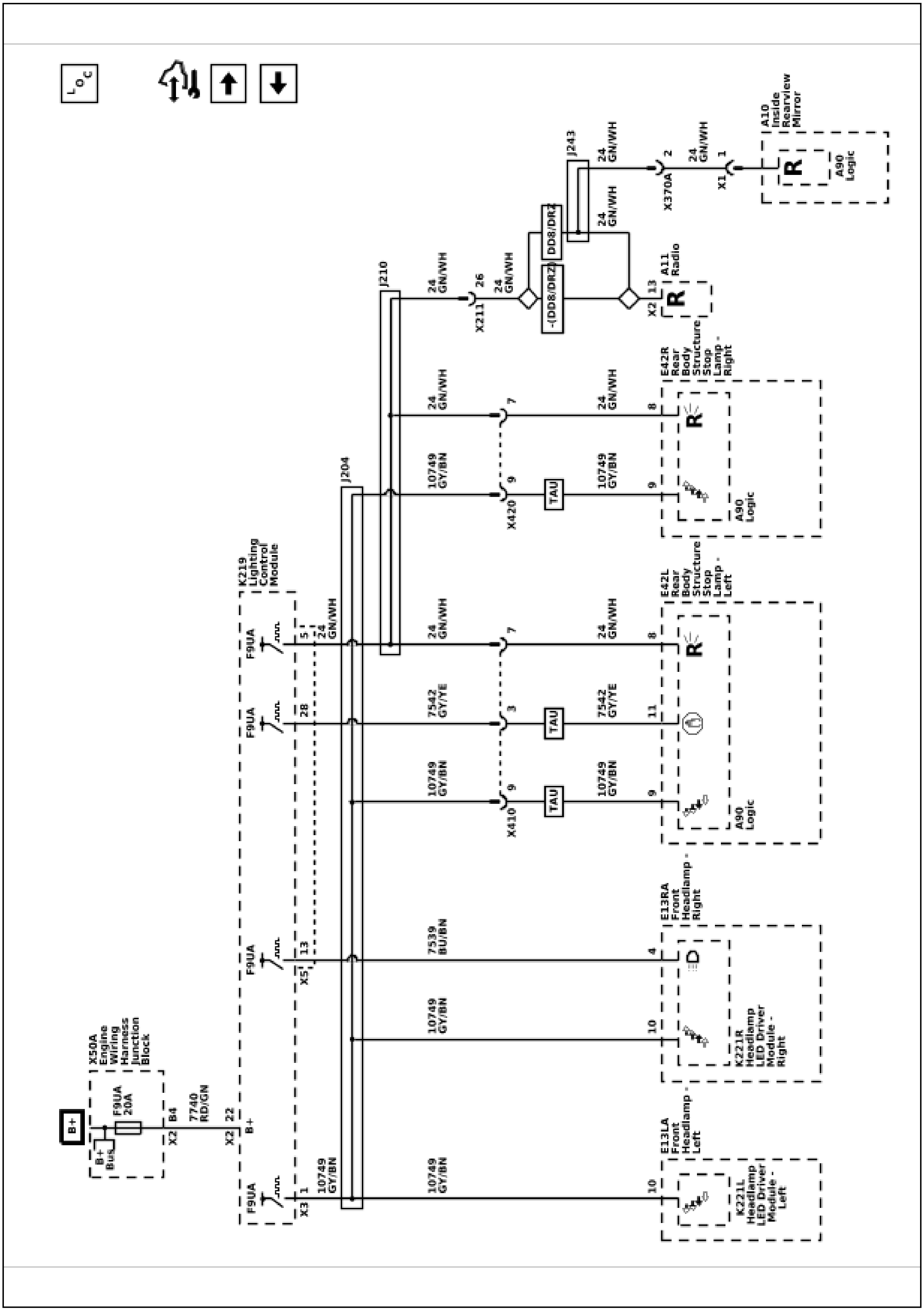

B+
B+ Bus
F6UA 20A
X50A Engine Wiring Harness Junction Block
X1 A1
7140 RD/VT
X1 9
B+
F6UA
F6UA
F6UA
F6UA
K219 Lighting Control Module
X1 7
1
X5 2
25
TAU/TGE
2024 YE/GN
820 BN/YE
J215
J329
TGE
TAU
TGE
TAU
2024 YE/GN
712 YE
2024 YE/GN
2024 YE/GN
2024 YE/GN
6995 BN/GY
820 BN/YE
820 BN/YE
X125 12
820 BN/YE
X403 11
X410 8
X420 8
4
UET
2024 YE/GN
2024 YE/GN
6995 BN/BU
X1 2
820 BN/YE
9
2
3
9
3
7
11
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
E42L Rear Body Structure Stop Lamp - Left
A90 Logic
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
E42R Rear Body Structure Stop Lamp - Right
A90 Logic
R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp
K68 Trailer Lamp Control Module
L O C

6885642

## Power Distribution Schematics (F7UA Fuse and Lighting Control Module Fused Outputs)

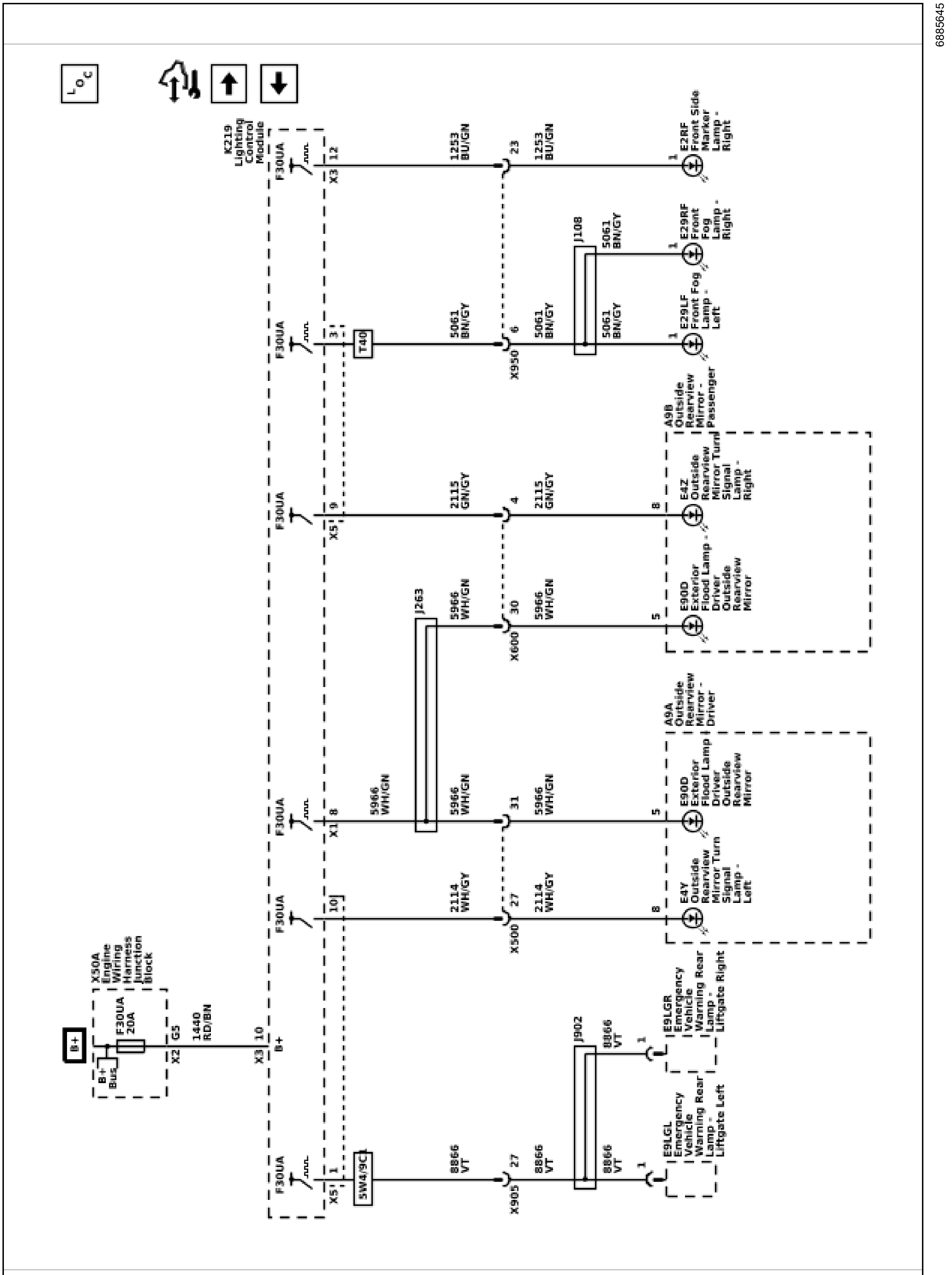

B+
B+ Bus
F7UA 20A
X50A Engine Wiring Harness Junction Block
X1 A2
540 RD/BU
X3 9
B+
K219 Lighting Control Module
F7UA
F7UA
F7UA
F7UA
X5 29
6
16
X3 4
7538 GY/BU
6993 BN/BU
7541 WH/YE
312 YE
X410 4
X420 3
TAU
6993 BN/BU
7541 GY/YE
4
7
11
2
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
E42L Rear Body Structure Stop Lamp - Left
A90 Logic
E42R Rear Body Structure Stop Lamp - Right
A90 Logic
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
6885643

## Power Distribution Schematics (F9UA Fuse and Lighting Control Module Fused Outputs)

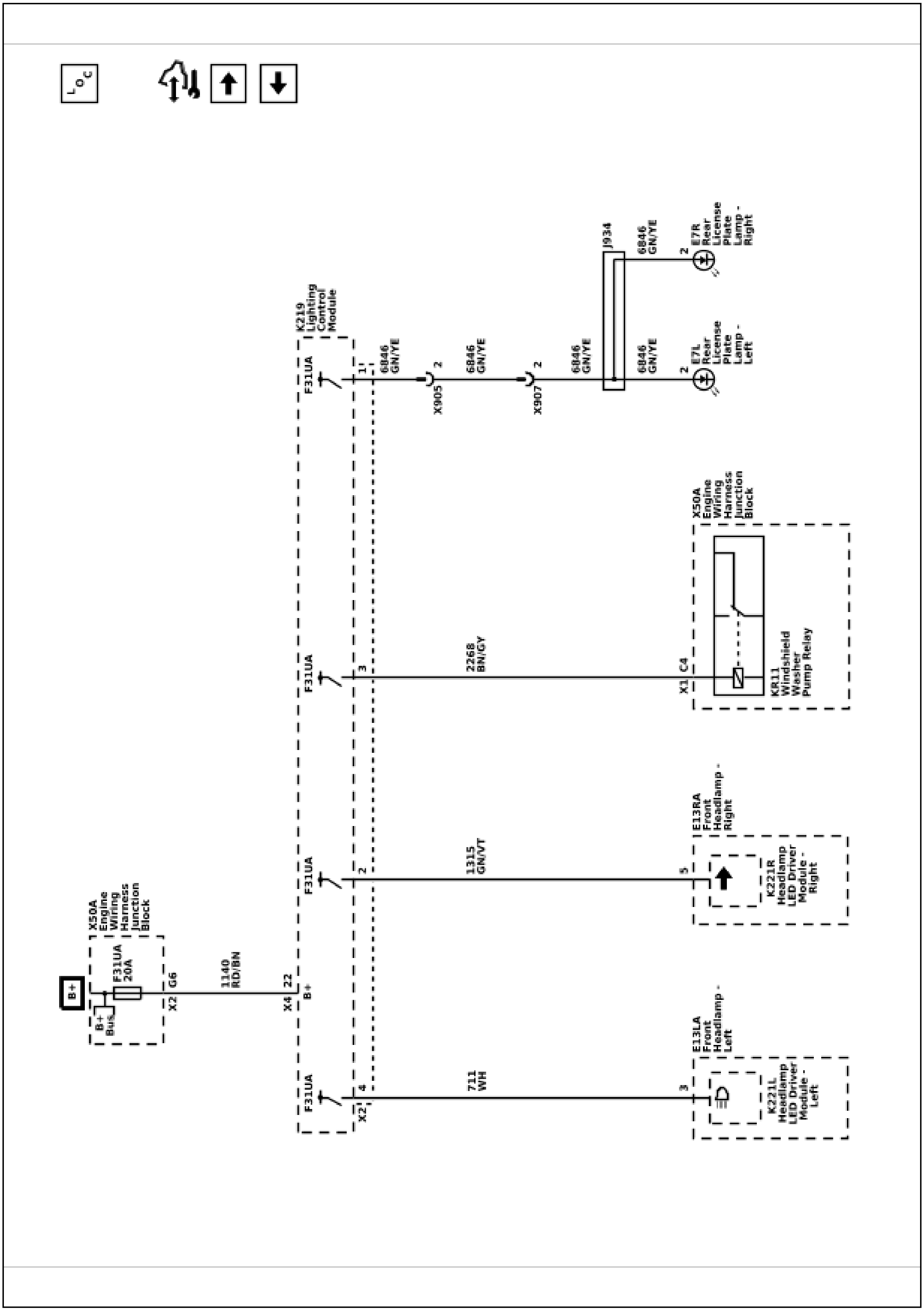

B+
B+ Bus
X50A Engine Wiring Harness Junction Block
F9UA 20A
X2 B4
7740 RD/GN
X2 22 B+
K219 Lighting Control Module
F9UA
X3 1
X5 13
28
5
10749 GY/BN
7539 BU/BN
7542 GY/YE
24 GN/WH
J204
J210
X410 9 3 7
X420 9 7
X211 26
TAU
-(DD8/DR2)
DD8/DR2
J243
X370A 2
X1 1
10
4
11
8
9
13
X2
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
E42L Rear Body Structure Stop Lamp - Left
E42R Rear Body Structure Stop Lamp - Right
A90 Logic
A11 Radio
A10 Inside Rearview Mirror
R

6885644

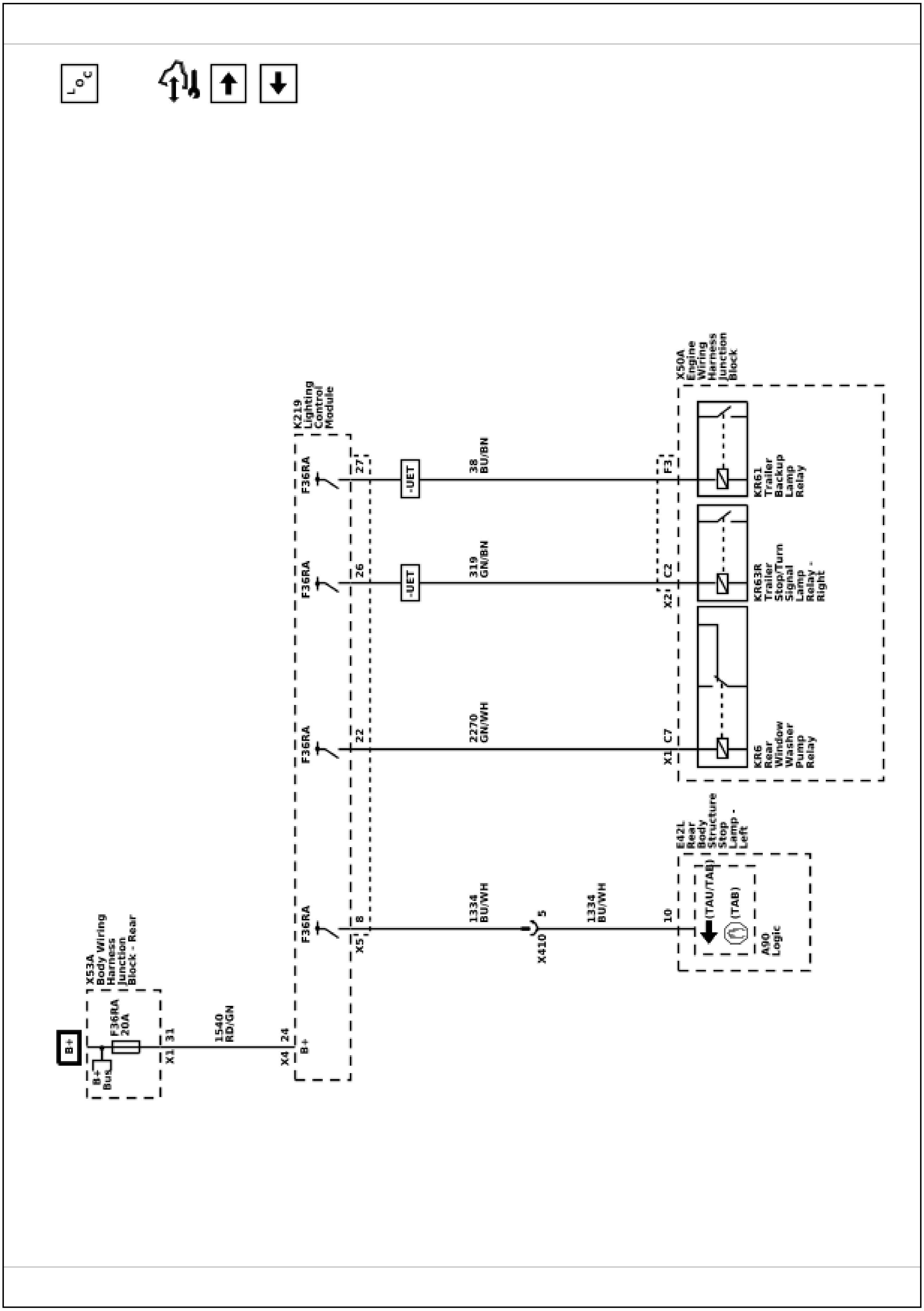
# Power Distribution Schematics (F30UA Fuse and Lighting Control Module Fused Outputs)


6885645
B+
B+ Bus
X50A Engine Wiring Harness Junction Block
F30UA 20A
X2 G5
1440 RD/BN
X3 10 B+
K219 Lighting Control Module
F30UA
X3 12
X5 3
X5 9
X1 8
10
X5 1
T40
5W4/9C
J263
J108
J902
1253 BU/GN
5061 BN/GY
2115 GN/GY
5966 WH/GN
2114 WH/GY
8866 VT
23
6
4
30
31
27
X950
X600
X500
X905
1
8
5
E2RF Front Side Marker Lamp - Right
E29RF Front Fog Lamp - Right
E29LF Front Fog Lamp - Left
A9B Outside Rearview Mirror - Passenger
E4Z Outside Rearview Mirror Turn Signal Lamp - Right
E90D Exterior Flood Lamp - Driver Outside Rearview Mirror
A9A Outside Rearview Mirror - Driver
E4Y Outside Rearview Mirror Turn Signal Lamp - Left
E9LGR Emergency Vehicle Warning Rear Lamp - Liftgate Right
E9LGL Emergency Vehicle Warning Rear Lamp - Liftgate Left

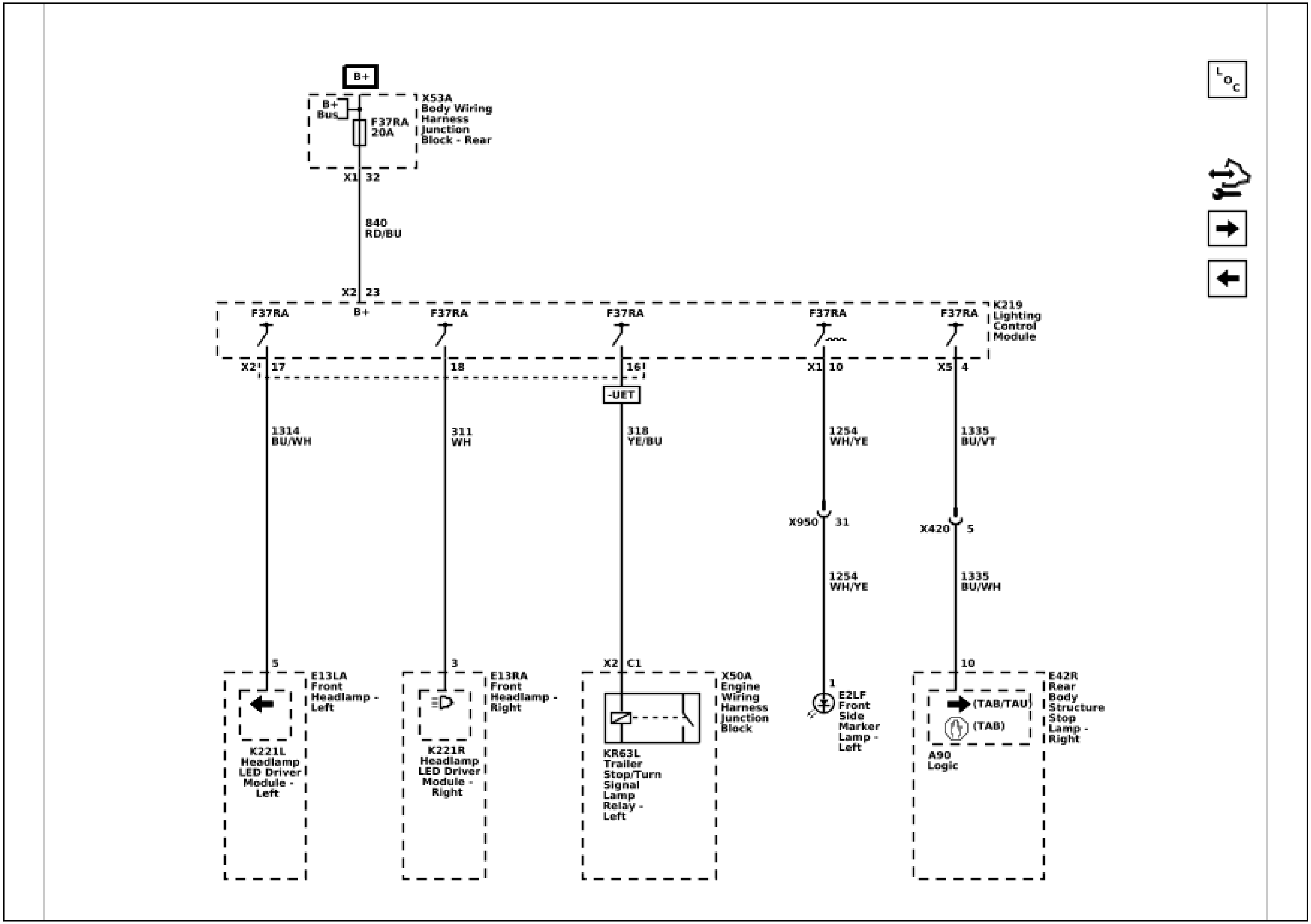
## Power Distribution Schematics (F31UA Fuse and Lighting Control Module Fused Outputs)


6885646
B+
B+ Bus
F31UA 20A
X50A Engine Wiring Harness Junction Block
X2 G6
1140 RD/BN
X4 22 B+
K219 Lighting Control Module
F31UA
X2 4
711 WH
3
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
F31UA
2
1315 GN/VT
5
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
F31UA
3
2268 BN/GY
X1 C4
X50A Engine Wiring Harness Junction Block
KR11 Windshield Washer Pump Relay
F31UA
1
6846 GN/YE
X905 2
6846 GN/YE
X907 2
6846 GN/YE
J934
6846 GN/YE
2
E7L Rear License Plate Lamp - Left
6846 GN/YE
2
E7R Rear License Plate Lamp - Right

# Power Distribution Schematics (F36RA Fuse and Lighting Control Module Fused Outputs)

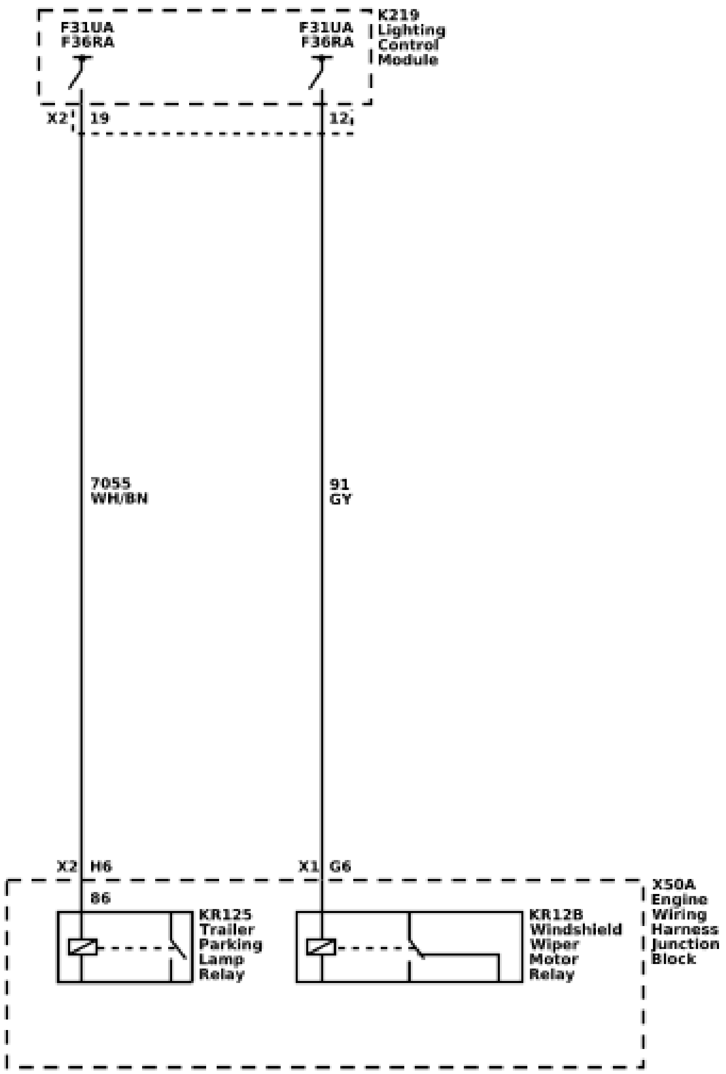

6885647
B+
B+ Bus
X53A Body Wiring Harness Junction Block - Rear
F36RA 20A
X1 31
1540 RD/GN
X4 24
B+
K219 Lighting Control Module
F36RA
X5 8
F36RA
22
F36RA
26
F36RA
27
-UET
-UET
1334 BU/WH
X410 5
1334 BU/WH
2270 GN/WH
319 GN/BN
38 BU/BN
10
E42L Rear Body Structure Stop Lamp - Left
(TAU/TAB)
(TAB)
A90 Logic
X1 C7
X2 C2
F3
X50A Engine Wiring Harness Junction Block
KR6 Rear Window Washer Pump Relay
KR63R Trailer Stop/Turn Signal Lamp Relay - Right
KR61 Trailer Backup Lamp Relay

# Power Distribution Schematics (F37RA Fuse and Lighting Control Module Fused Outputs)


B+
B+ Bus
F37RA 20A
X53A Body Wiring Harness Junction Block - Rear
X1 32
840 RD/BU
X2 23
B+
K219 Lighting Control Module
F37RA
X2 17
1314 BU/WH
5
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
F37RA
18
311 WH
3
E13RA Front Headlamp - Right
K221R Headlamp LED Driver Module - Right
F37RA
16
-UET
318 YE/BU
X2 C1
X50A Engine Wiring Harness Junction Block
KR63L Trailer Stop/Turn Signal Lamp Relay - Left
F37RA
X1 10
1254 WH/YE
X950 31
1254 WH/YE
1
E2LF Front Side Marker Lamp - Left
F37RA
X5 4
1335 BU/VT
X420 5
1335 BU/WH
10
E42R Rear Body Structure Stop Lamp - Right
(TAB/TAU)
(TAB)
A90 Logic

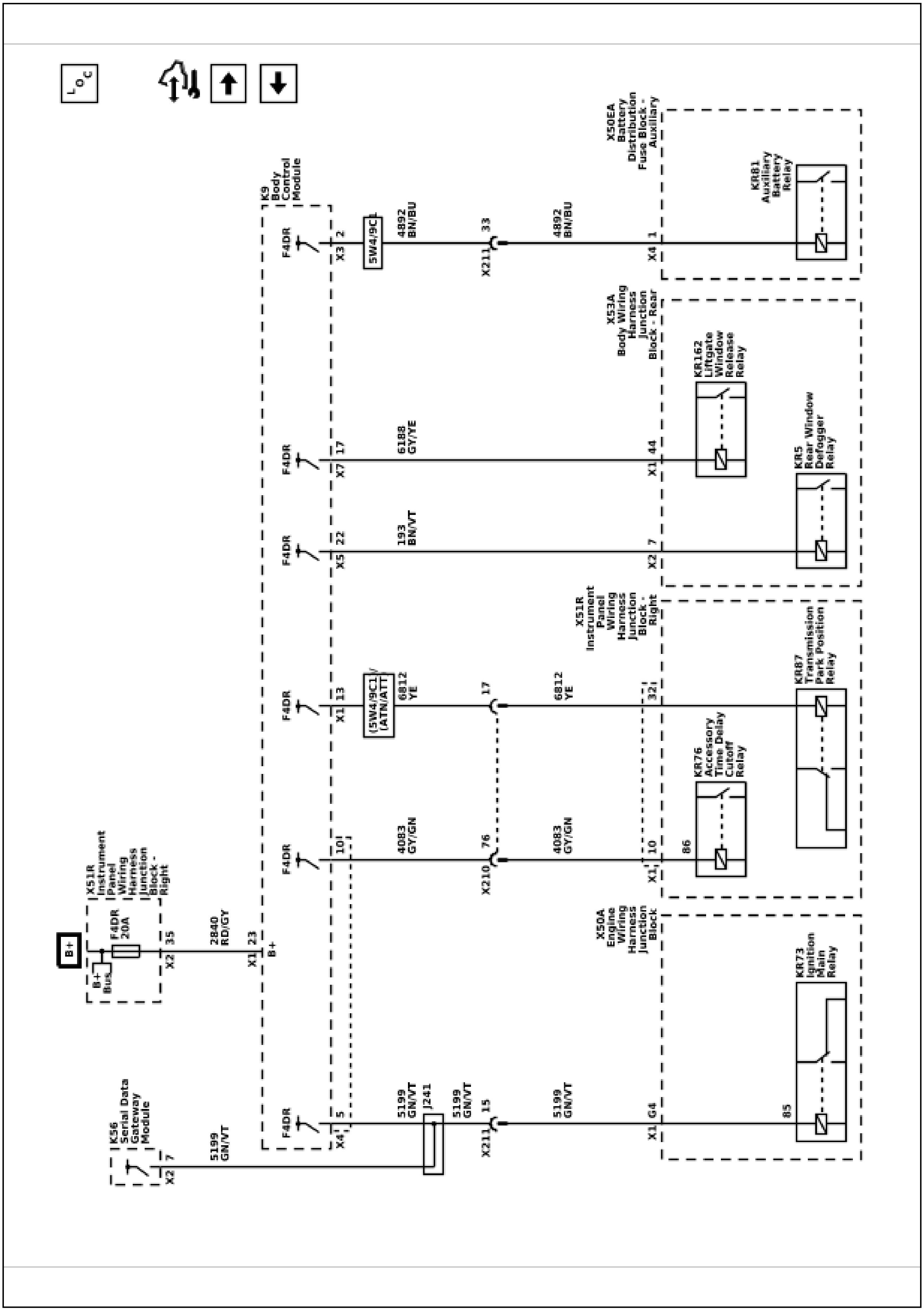
6885648

## Power Distribution Schematics (F31UA and F36RA Fuses Lighting Control Module Redundant Outputs)

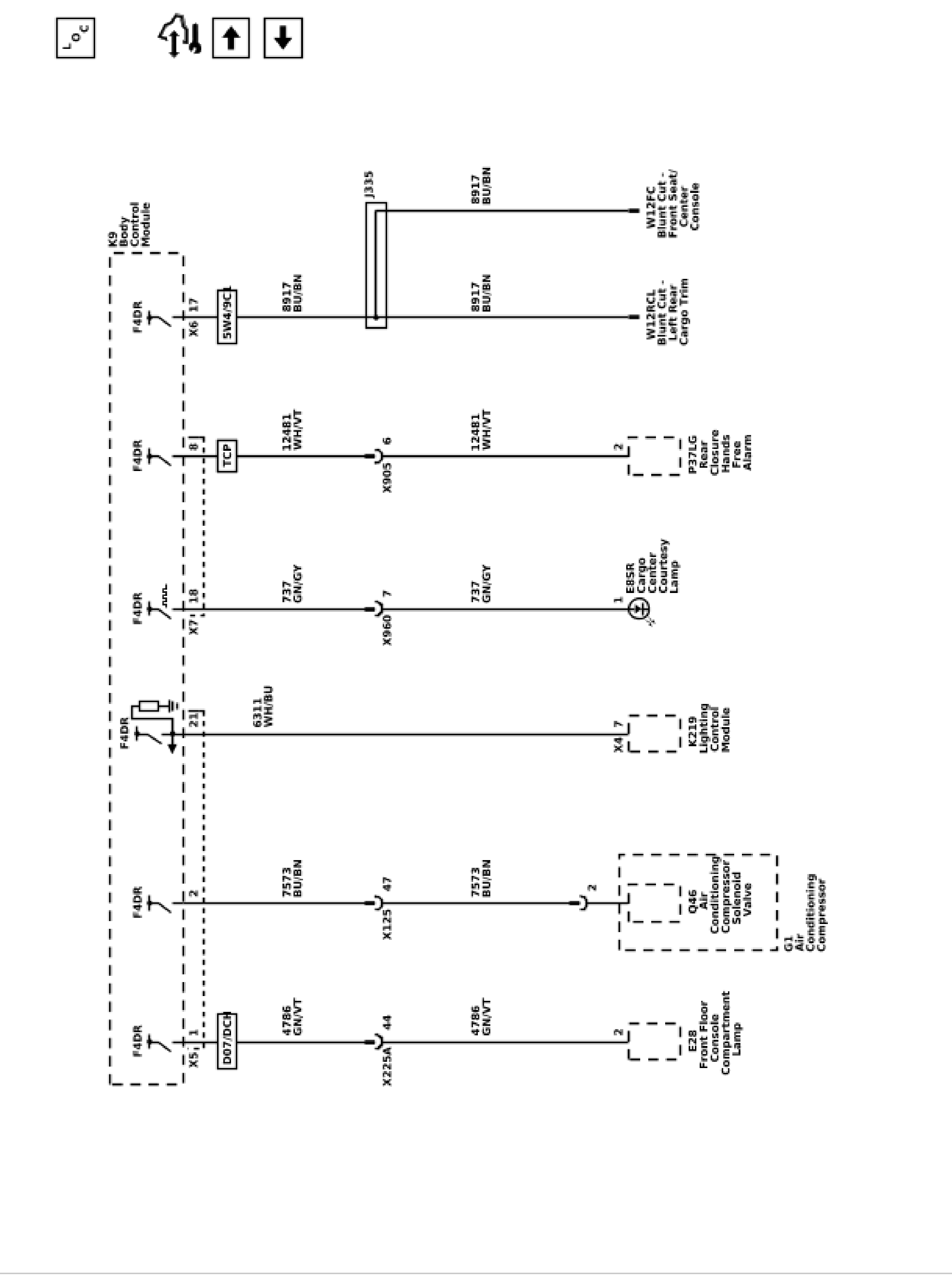

F31UA
F36RA
F31UA
F36RA
K219 Lighting Control Module
X2 19
12
7055 WH/BN
91 GY
X2 H6
X1 G6
86
KR125 Trailer Parking Lamp Relay
KR12B Windshield Wiper Motor Relay
X50A Engine Wiring Harness Junction Block

6885649

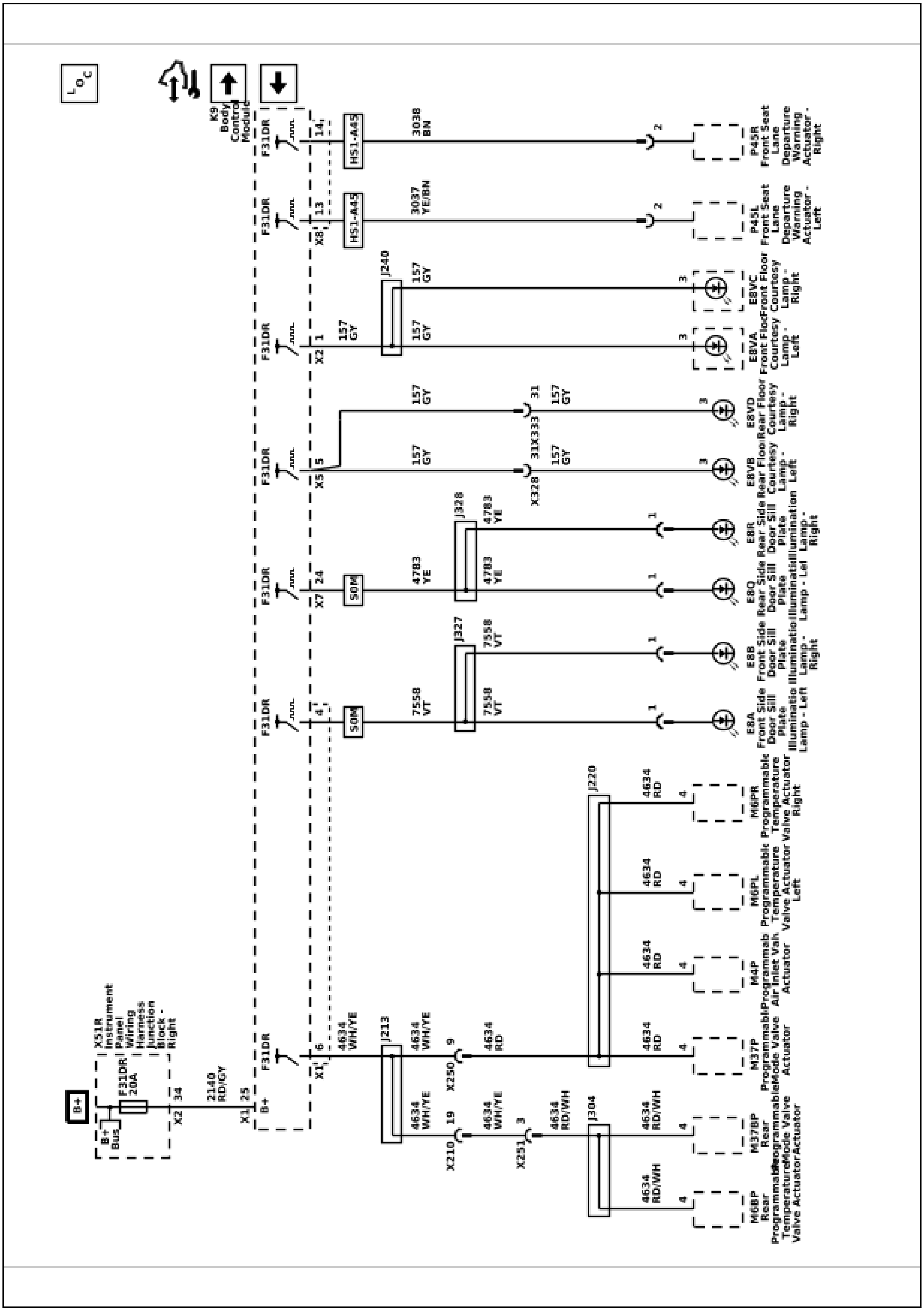
## Power Distribution Schematics (F4DR Fuse and Body Control Module Fused Outputs 1 of 2)


6885650
B+
B+ Bus
X51R Instrument Panel Wiring Harness Junction Block - Right
F4DR 20A
X2 35
2840 RD/GY
X1 23
B+
K9 Body Control Module
K56 Serial Data Gateway Module
X2 7
5199 GN/VT
F4DR
X4 5
5199 GN/VT
J241
5199 GN/VT
X211 15
5199 GN/VT
X50A Engine Wiring Harness Junction Block
X1 G4
85
KR73 Ignition Main Relay
X1 10
4083 GY/GN
X210 76
4083 GY/GN
X1 10
86
KR76 Accessory Time Delay Cutoff Relay
X1 13
(5W4/9C1)/(ATN/ATT)
6812 YE
17
6812 YE
32
KR87 Transmission Park Position Relay
X5 22
193 BN/VT
X2 7
KR5 Rear Window Defogger Relay
X7 17
6188 GY/YE
X1 44
KR162 Liftgate Window Release Relay
X53A Body Wiring Harness Junction Block - Rear
X3 2
5W4/9C1
4892 BN/BU
X211 33
4892 BN/BU
X4 1
KR81 Auxiliary Battery Relay
X50EA Battery Distribution Fuse Block - Auxiliary

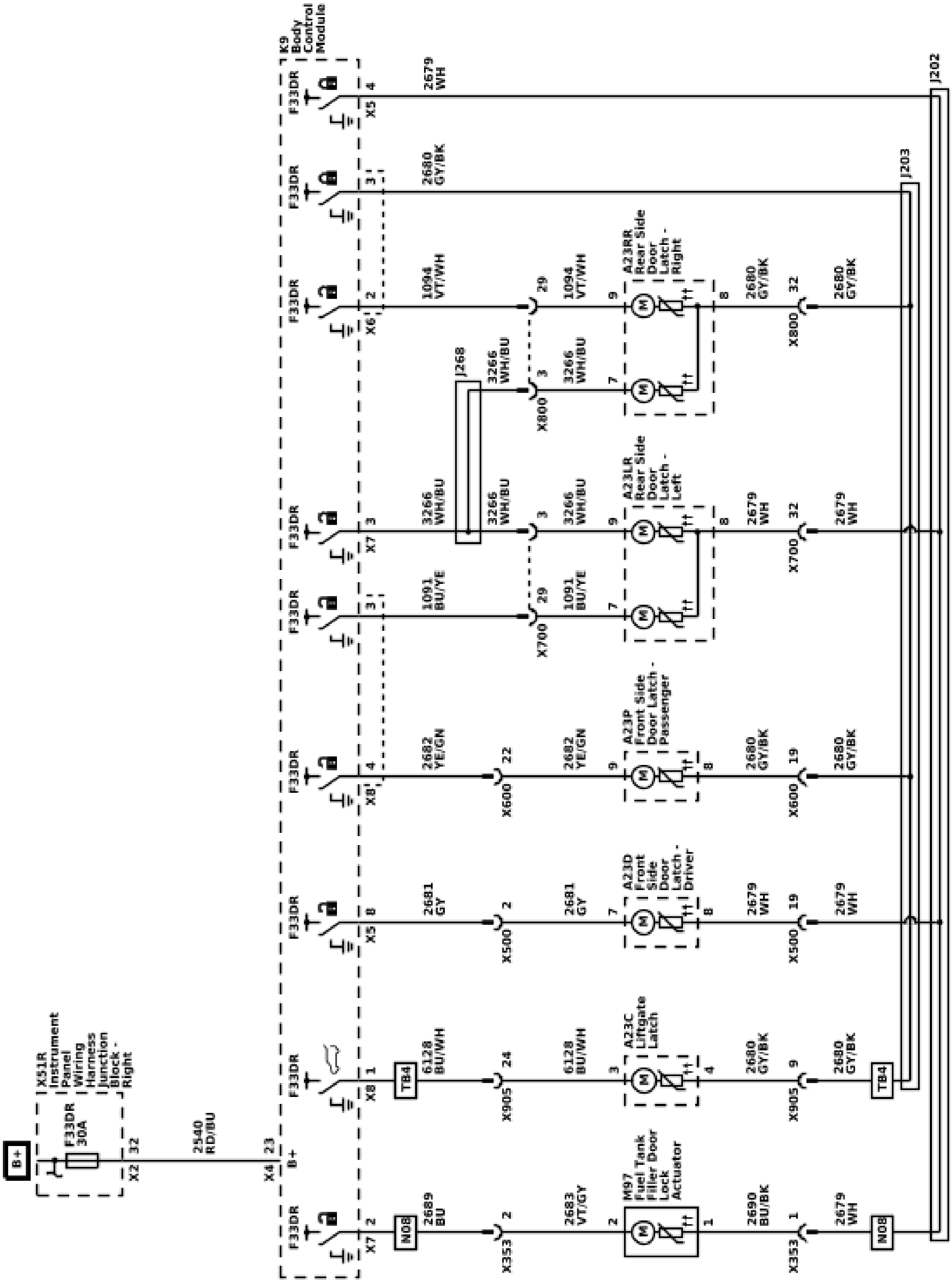
## Power Distribution Schematics (F4DR Fuse and Body Control Module Fused Outputs 2 of 2)


6885651
K9 Body Control Module
F4DR
X6 17
5W4/9C
8917 BU/BN
J335
8917 BU/BN
W12FC Blunt Cut - Front Seat/ Center Console
W12RCL Blunt Cut - Left Rear Cargo Trim
8
TCP
12481 WH/VT
X905 6
12481 WH/VT
2
P37LG Rear Closure Hands Free Alarm
X7 18
737 GN/GY
X960 7
737 GN/GY
1
E85R Cargo Center Courtesy Lamp
21
6311 WH/BU
X4 7
K219 Lighting Control Module
2
7573 BU/BN
X125 47
7573 BU/BN
2
Q46 Air Conditioning Compressor Solenoid Valve
G1 Air Conditioning Compressor
X5 1
D07/DCH
4786 GN/VT
X225A 44
4786 GN/VT
2
E28 Front Floor Console Compartment Lamp

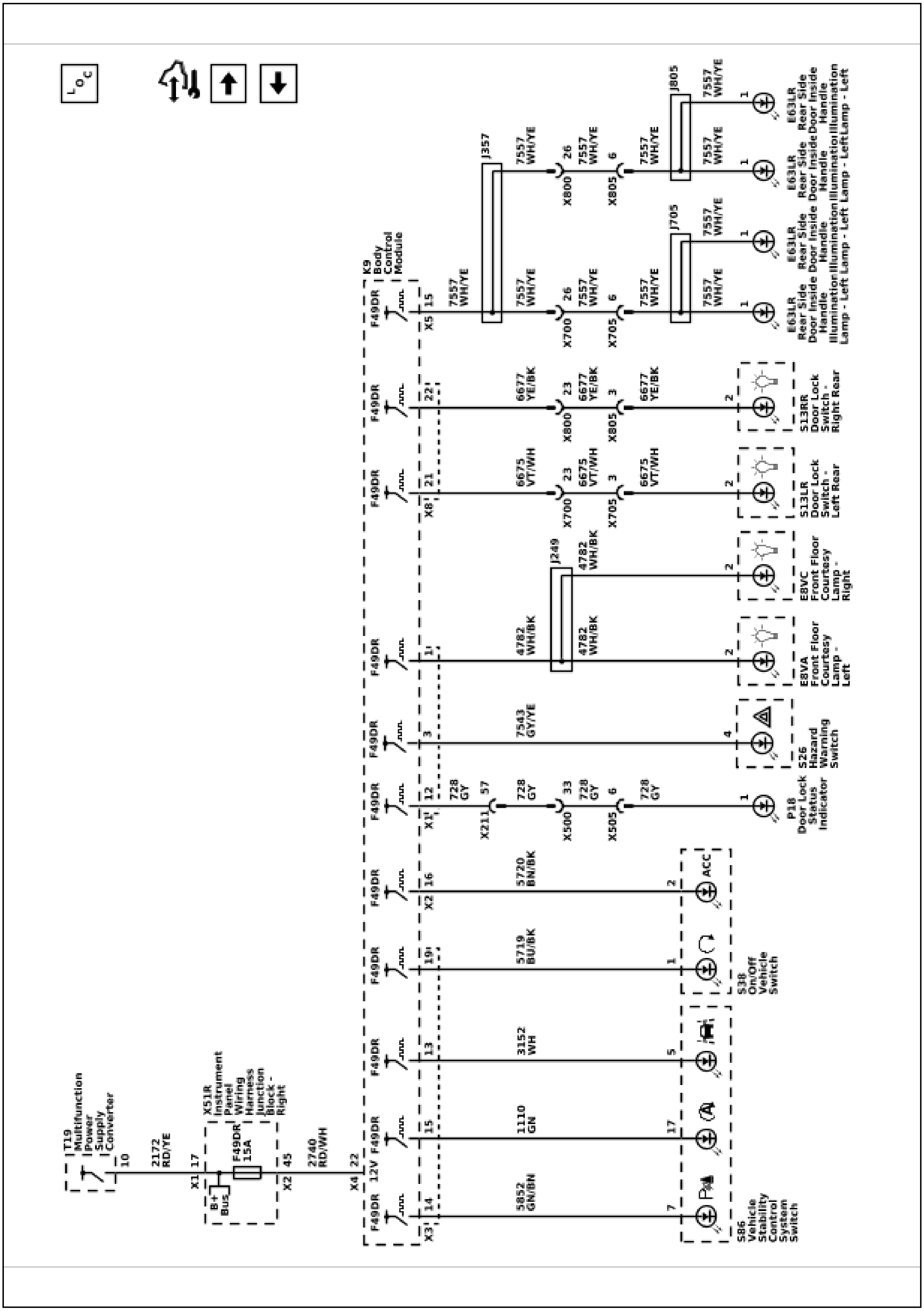
## Power Distribution Schematics (F31DR Fuse and Body Control Module Fused Outputs)


6885652
B+
B+ Bus
F31DR 20A
X51R Instrument Panel Wiring Harness Junction Block - Right
X2 34
2140 RD/GY
X1 25
B+
K9 Body Control Module
F31DR
X1 6
4634 WH/YE
J213
4634 WH/YE
X250 9
4634 RD
J220
4634 RD
4
M37P Programmable Mode Valve Actuator
M4P Programmable Air Inlet Valve Actuator
M6PL Programmable Temperature Valve Actuator Left
M6PR Programmable Temperature Valve Actuator Right
X210 19
4634 WH/YE
X251 3
4634 RD/WH
J304
4634 RD/WH
M37BP Rear Programmable Mode Valve Actuator
M6BP Rear Programmable Temperature Valve Actuator
4
S0M
7558 VT
J327
7558 VT
1
E8A Front Side Door Sill Plate Illumination Lamp - Left
E8B Front Side Door Sill Plate Illumination Lamp - Right
X7 24
4783 YE
J328
4783 YE
E8Q Rear Side Door Sill Plate Illumination Lamp - Left
E8R Rear Side Door Sill Plate Illumination Lamp - Right
X5 5
157 GY
X328 31
X333 31
3
E8VB Rear Floor Courtesy Lamp - Left
E8VD Rear Floor Courtesy Lamp - Right
X2 1
J240
E8VA Front Floor Courtesy Lamp - Left
E8VC Front Floor Courtesy Lamp - Right
X8 13
HS1-A45
3037 YE/BN
2
P45L Front Seat Lane Departure Warning Actuator - Left
14
3038 BN
P45R Front Seat Lane Departure Warning Actuator - Right

## Power Distribution Schematics (F33DR Fuse and Body Control Module Fused Outputs)

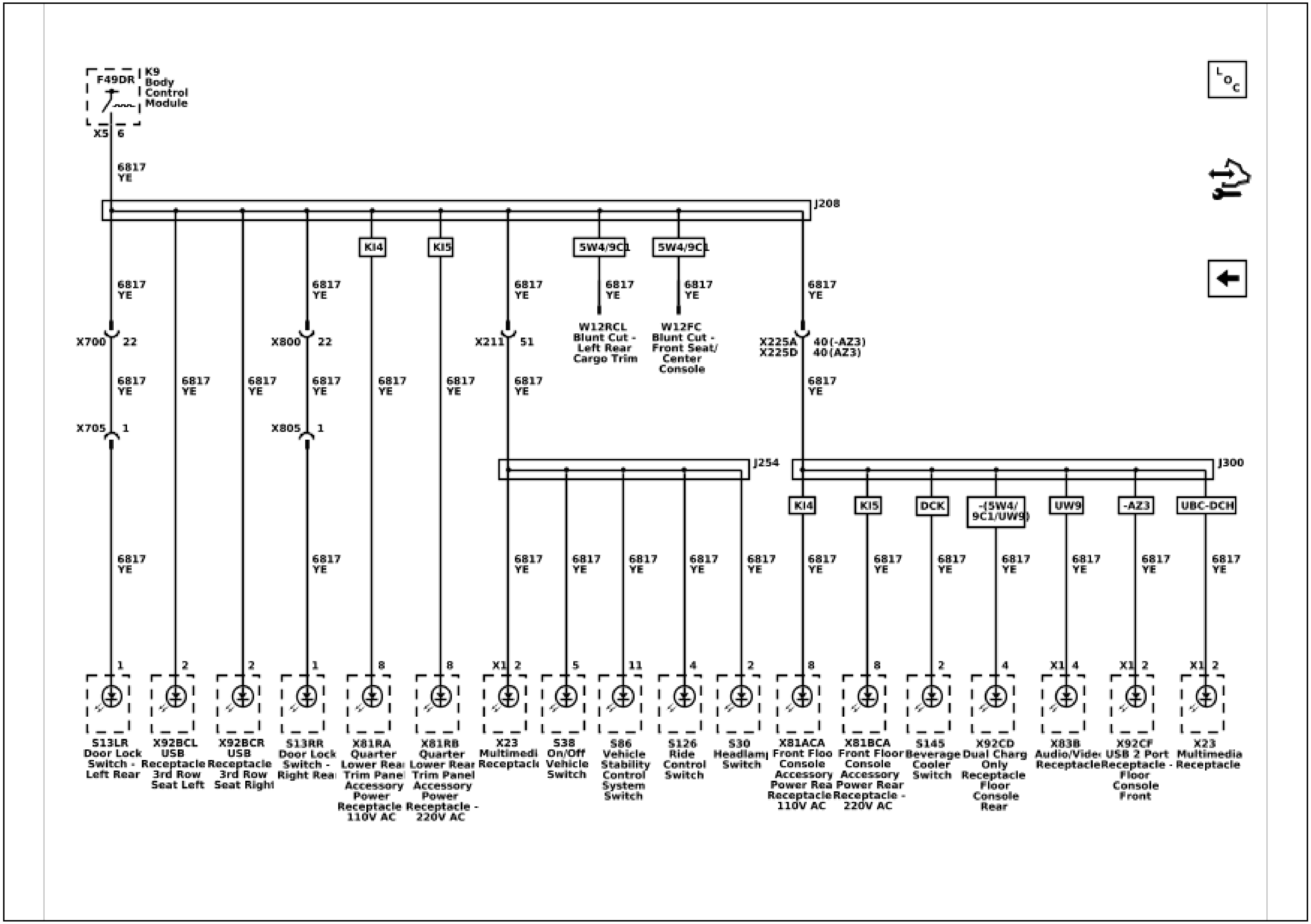

B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F33DR 30A
X2 32
2540 RD/BU
X4 23 B+
K9 Body Control Module
F33DR
X7 2
2689 BU
N08
X353 2
2683 VT/GY
M97 Fuel Tank Filler Door Lock Actuator
2
1
2690 BU/BK
X353 1
2679 WH
X8 1
TB4
6128 BU/WH
X905 24
A23C Liftgate Latch
3
4
2680 GY/BK
X905 9
X5 8
2681 GY
X500 2
A23D Front Side Door Latch - Driver
7
8
2679 WH
X500 19
X8 4
2682 YE/GN
X600 22
A23P Front Side Door Latch - Passenger
9
8
2680 GY/BK
X600 19
X7 3
1091 BU/YE
X700 29
3266 WH/BU
X700 3
A23LR Rear Side Door Latch - Left
2679 WH
X700 32
J268
X6 2
1094 VT/WH
X800 29
X800 3
A23RR Rear Side Door Latch - Right
2680 GY/BK
X800 32
X5 4
J203
J202
6885653

## Power Distribution Schematics (F49DR Fuse and Body Control Module Fused Outputs 1 of 2)


T19 Multifunction Power Supply Converter
10
2172 RD/YE
X1 17
B+ Bus
F49DR 15A
X51R Instrument Panel Wiring Harness Junction Block - Right
X2 45
2740 RD/WH
X4 22
12V
F49DR
K9 Body Control Module
X3 14
5852 GN/BN
7
S86 Vehicle Stability Control System Switch
15
1110 GN
17
13
3152 WH
5
19
5719 BU/BK
1
S38 On/Off Vehicle Switch
X2 16
5720 BN/BK
2
ACC
X1 12
728 GY
X211 57
X500 33
X505 6
1
P18 Door Lock Status Indicator
3
7543 GY/YE
4
S26 Hazard Warning Switch
1
4782 WH/BK
J249
2
E8VA Front Floor Courtesy Lamp - Left
E8VC Front Floor Courtesy Lamp - Right
X8 21
6675 VT/WH
X700 23
X705 3
S13LR Door Lock Switch - Left Rear
22
6677 YE/BK
X800 23
X805 3
S13RR Door Lock Switch - Right Rear
X5 15
7557 WH/YE
J357
X700 26
X705 6
J705
X800 26
X805 6
J805
E63LR Rear Side Door Inside Handle Illumination Lamp - Left

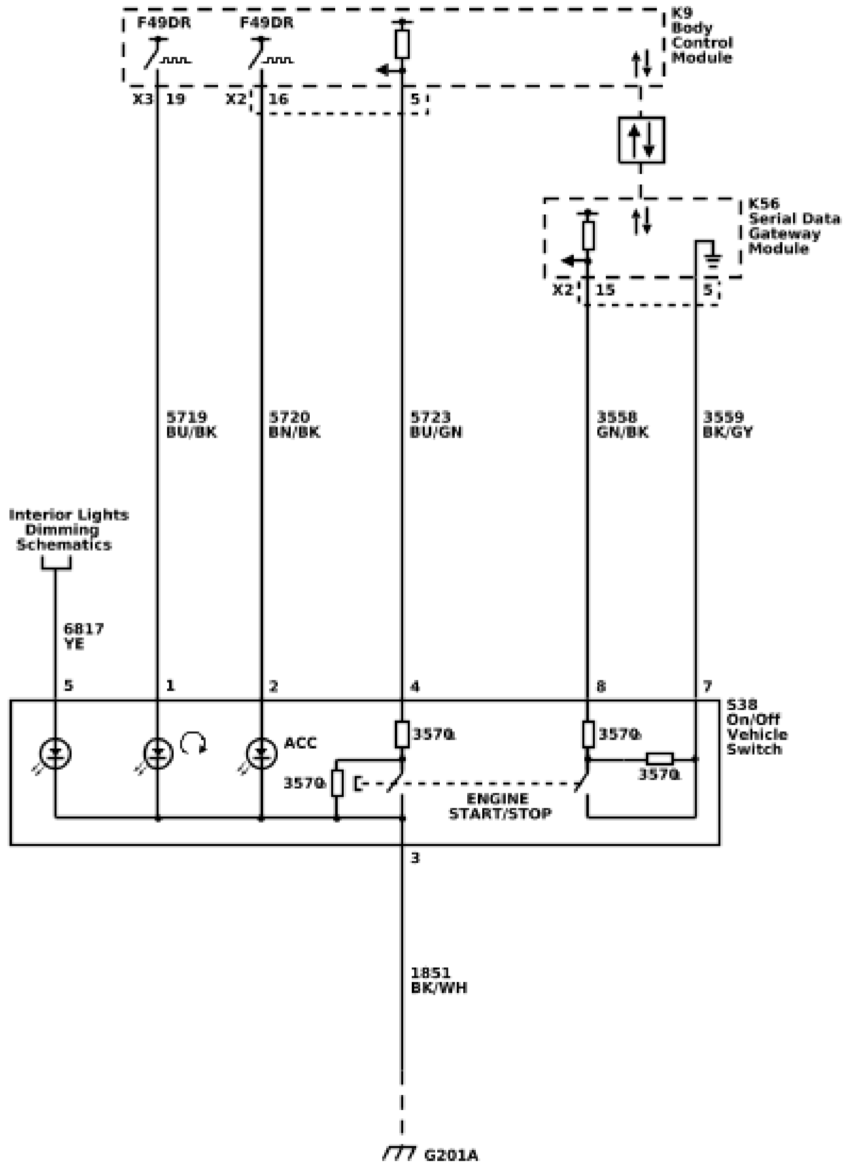
6885654

## Power Distribution Schematics (F49DR Fuse and Body Control Module Fused Outputs 2 of 2)


F49DR
K9 Body Control Module
X5 6
6817 YE
J208
KI4
KI5
5W4/9C1
5W4/9C1
W12RCL Blunt Cut - Left Rear Cargo Trim
W12FC Blunt Cut - Front Seat/ Center Console
X700 22
X800 22
X211 51
X225A 40(-AZ3)
X225D 40(AZ3)
X705 1
X805 1
J254
J300
KI4
KI5
DCK
-(5W4/ 9C1/UW9)
UW9
-AZ3
UBC-DCH
1
2
2
1
8
8
X1 2
5
11
4
2
8
8
2
4
X1 4
X1 2
X1 2
S13LR Door Lock Switch - Left Rear
X92BCL USB Receptacle 3rd Row Seat Left
X92BCR USB Receptacle 3rd Row Seat Right
S13RR Door Lock Switch - Right Rear
X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle 110V AC
X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC
X23 Multimedia Receptacle
S38 On/Off Vehicle Switch
S86 Vehicle Stability Control System Switch
S126 Ride Control Switch
S30 Headlamp Switch
X81ACA Front Floor Console Accessory Power Rear Receptacle 110V AC
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
S145 Beverage Cooler Switch
X92CD Dual Charg Only Receptacle Floor Console Rear
X83B Audio/Video Receptacle
X92CF USB 2 Port Receptacle - Floor Console Front
X23 Multimedia Receptacle

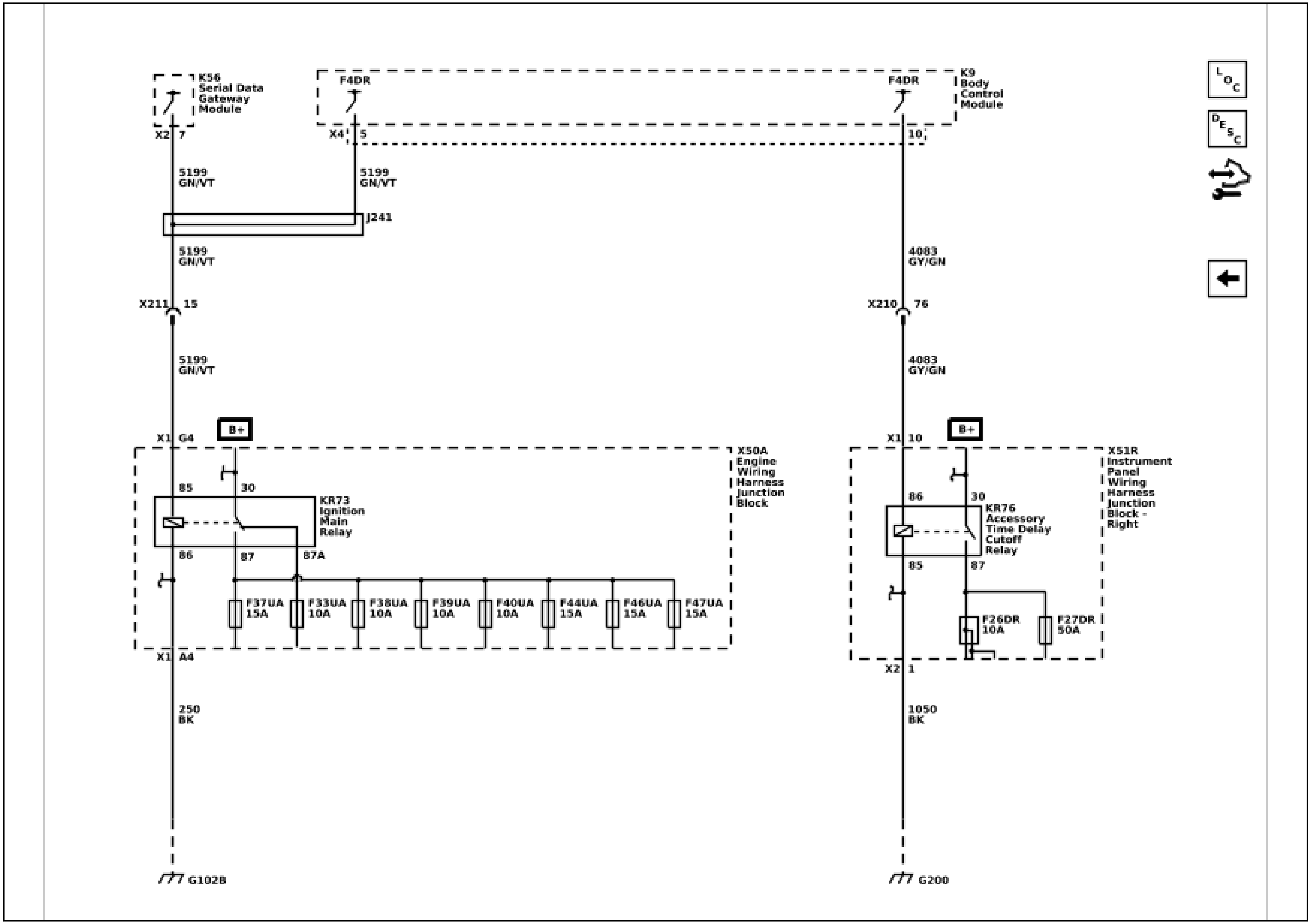
6885655

## Power Moding Schematics (On/Off Vehicle Switch)


F49DR
F49DR
K9
Body
Control
Module
X3 19
X2 16
5
K56
Serial Data
Gateway
Module
X2 15
5
5719
BU/BK
5720
BN/BK
5723
BU/GN
3558
GN/BK
3559
BK/GY
Interior Lights
Dimming
Schematics
6817
YE
5
1
2
4
8
7
S38
On/Off
Vehicle
Switch
ACC
3570Ω
3570Ω
3570Ω
3570Ω
3570Ω
ENGINE
START/STOP
3
1851
BK/WH
G201A

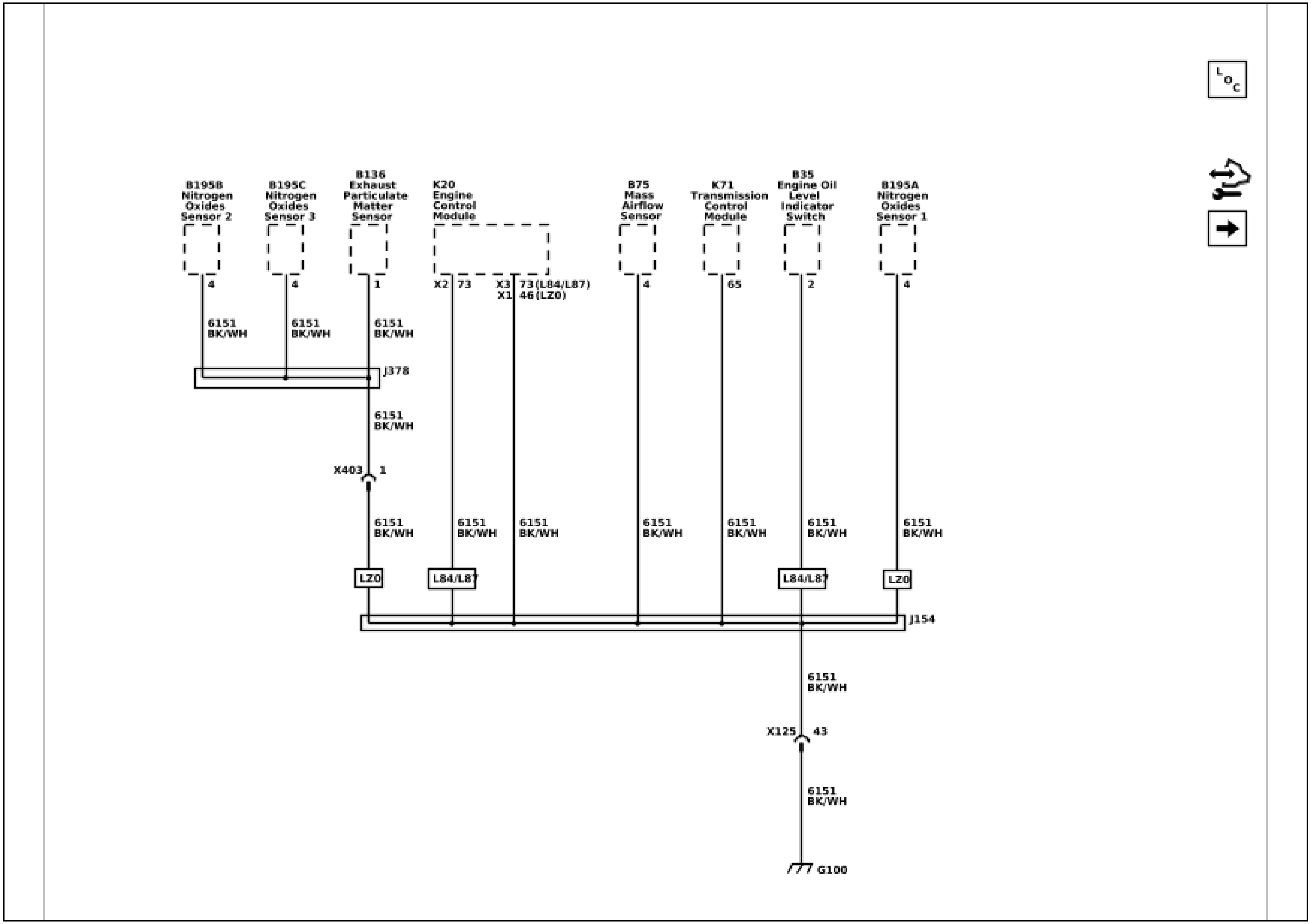
6885656

## Power Moding Schematics (Ignition Main and Accessory Time Delay Cutoff Relays)

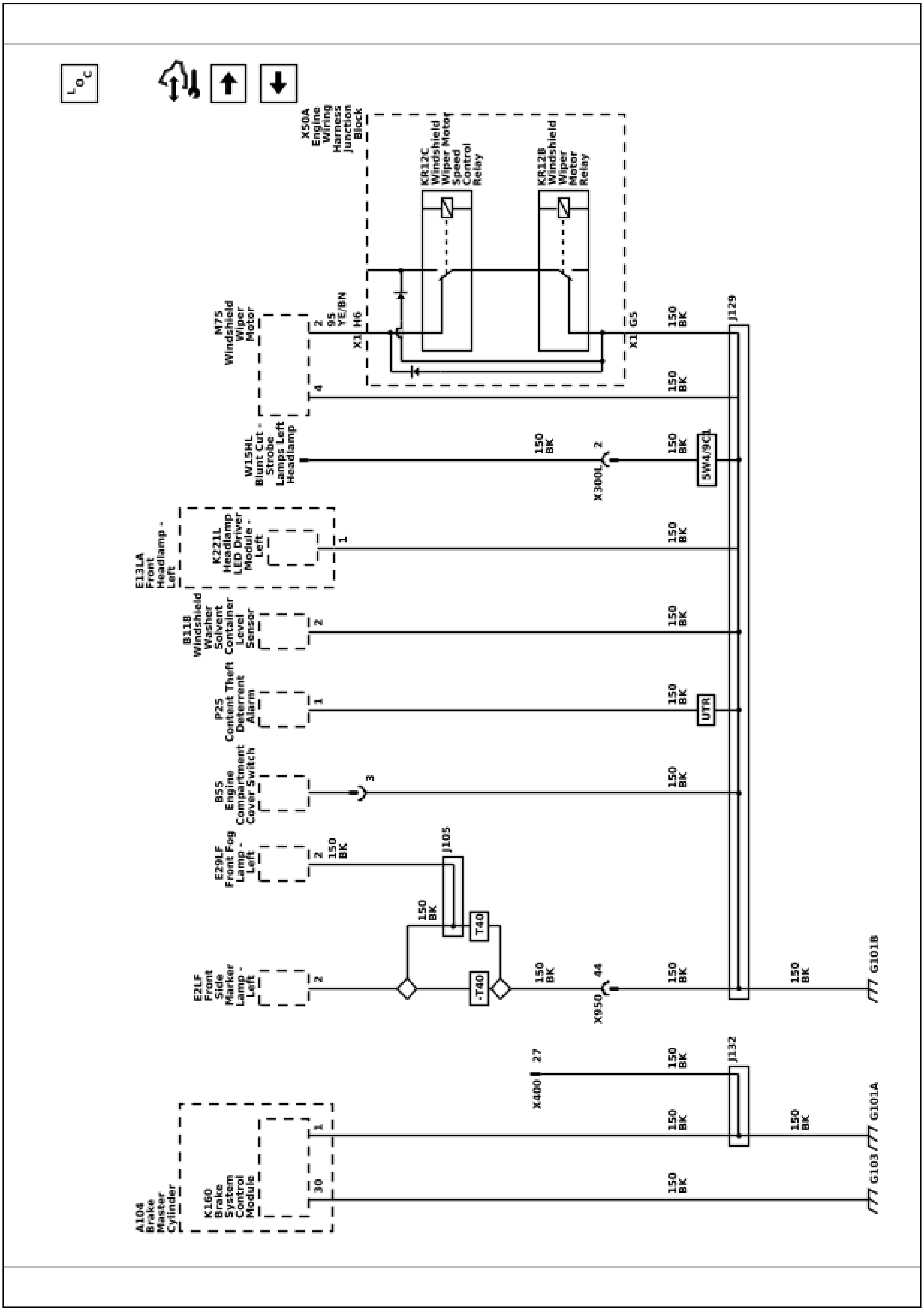

K56 Serial Data Gateway Module
X2 7
F4DR
X4 5
F4DR
10
K9 Body Control Module
5199 GN/VT
5199 GN/VT
J241
5199 GN/VT
X211 15
5199 GN/VT
4083 GY/GN
X210 76
4083 GY/GN
B+
X1 G4
X50A Engine Wiring Harness Junction Block
85
30
KR73 Ignition Main Relay
86
87
87A
F37UA 15A
F33UA 10A
F38UA 10A
F39UA 10A
F40UA 10A
F44UA 15A
F46UA 15A
F47UA 15A
X1 A4
250 BK
G102B
B+
X1 10
X51R Instrument Panel Wiring Harness Junction Block - Right
86
30
KR76 Accessory Time Delay Cutoff Relay
85
87
F26DR 10A
F27DR 50A
X2 1
1050 BK
G200

6885657

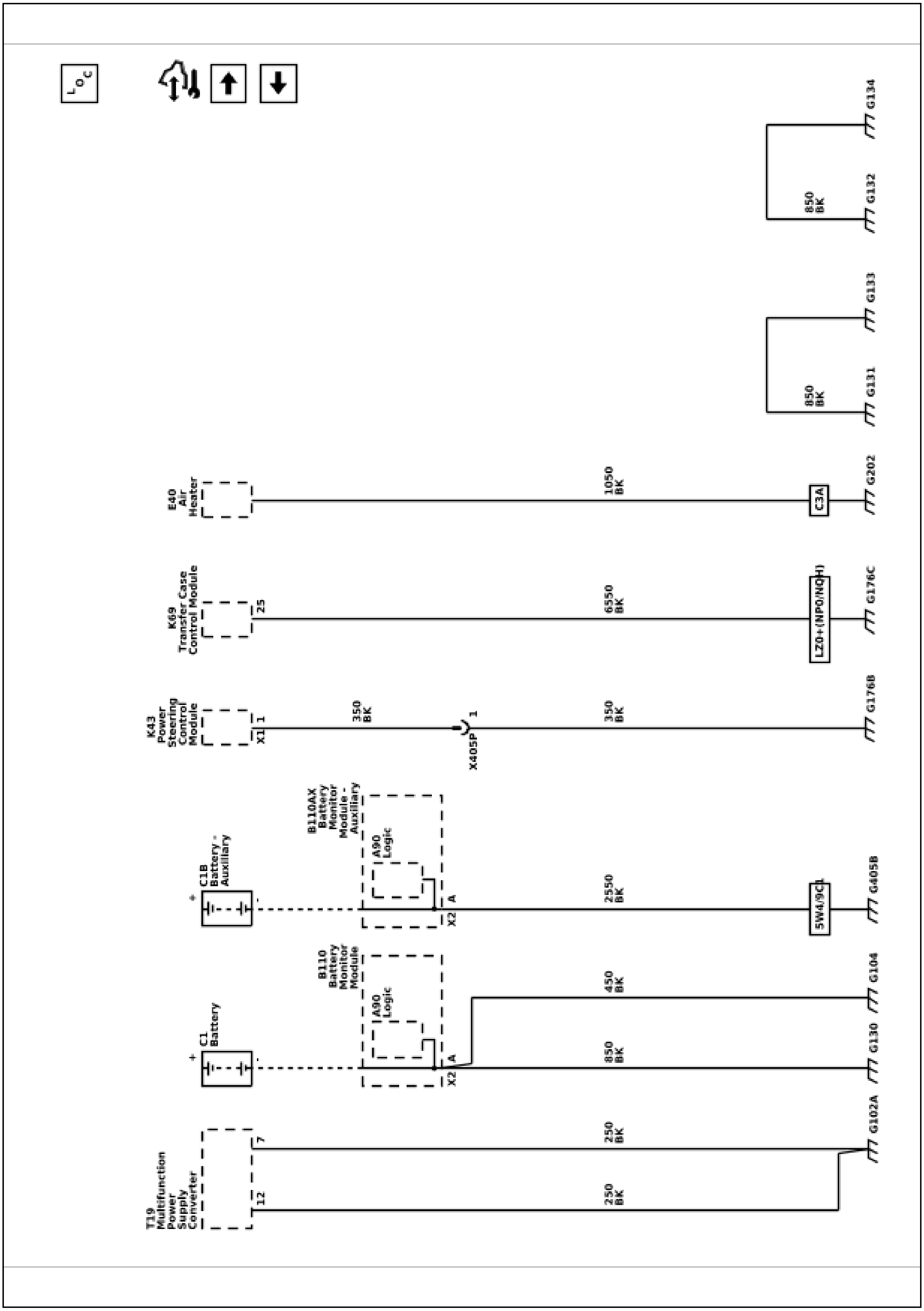
## Ground Distribution Schematics (G100)


B195B Nitrogen Oxides Sensor 2
B195C Nitrogen Oxides Sensor 3
B136 Exhaust Particulate Matter Sensor
K20 Engine Control Module
B75 Mass Airflow Sensor
K71 Transmission Control Module
B35 Engine Oil Level Indicator Switch
B195A Nitrogen Oxides Sensor 1
4
4
1
X2 73
X3 73 (L84/L87)
X1 46 (LZ0)
4
65
2
4
6151 BK/WH
J378
X403 1
LZ0
L84/L87
L84/L87
LZ0
J154
X125 43
G100
6885658

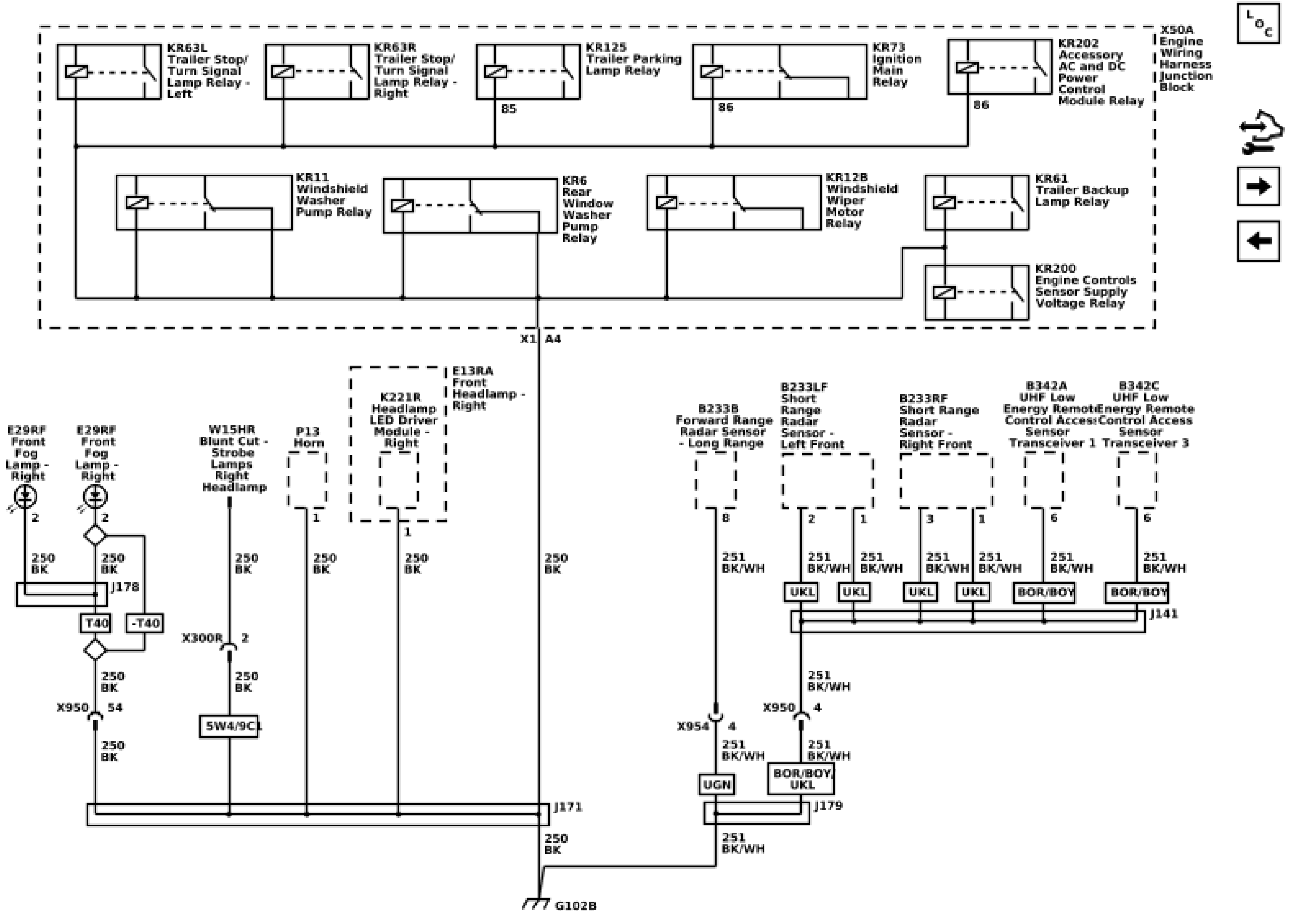
## Ground Distribution Schematics (G101A, G101B, and G103)


6885659
X50A Engine Wiring Harness Junction Block
KR12C Windshield Wiper Motor Speed Control Relay
KR12B Windshield Wiper Motor Relay
M75 Windshield Wiper Motor
2
95 YE/BN
X1 H6
X1 G5
4
150 BK
J129
W15HL Blunt Cut - Strobe Lamps Left Headlamp
X300L 2
5W4/9C1
E13LA Front Headlamp - Left
K221L Headlamp LED Driver Module - Left
1
B118 Windshield Washer Solvent Container Level Sensor
2
P25 Content Theft Deterrent Alarm
1
UTR
B55 Engine Compartment Cover Switch
3
E29LF Front Fog Lamp - Left
2
J105
T40
-T40
E2LF Front Side Marker Lamp - Left
2
X950 44
G101B
X400 27
J132
G101A
A104 Brake Master Cylinder
K160 Brake System Control Module
1
30
G103

## Ground Distribution Schematics (G102A, G104, G130, G131, G132, G133, G134, G176B G176C, G202, and G405B)

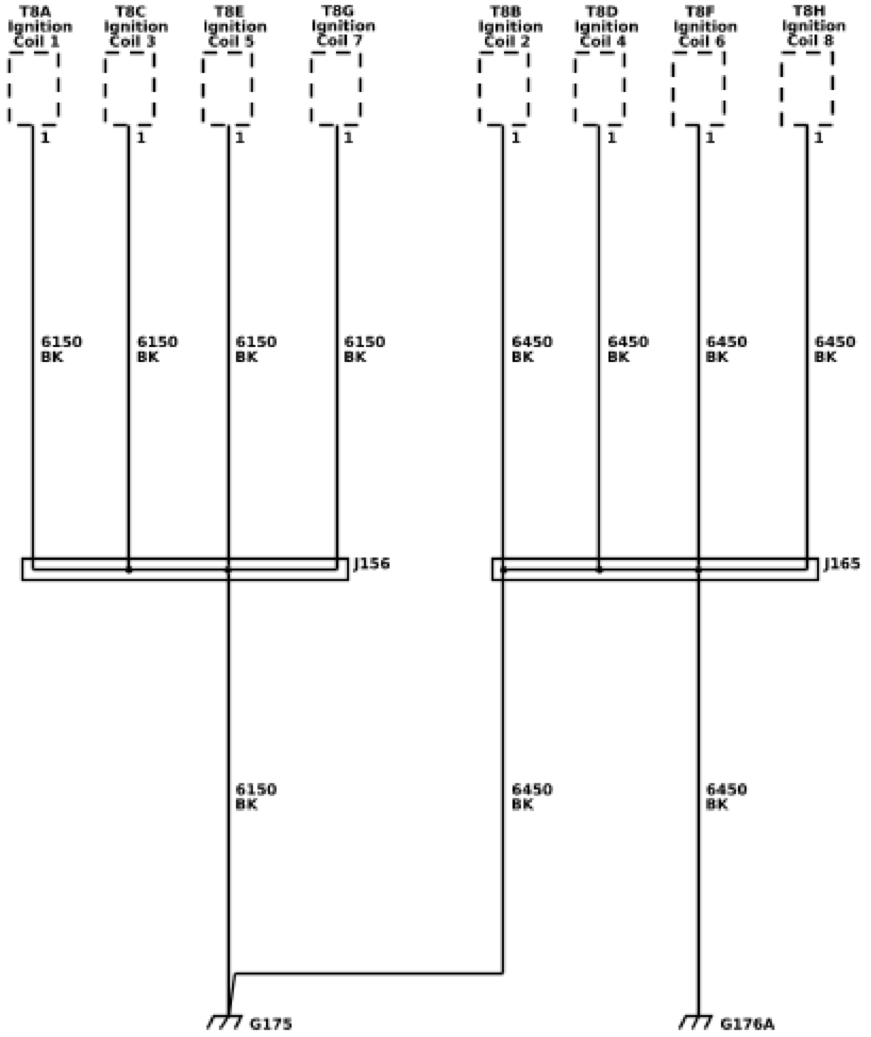

6885660
T19 Multifunction Power Supply Converter
12
7
250 BK
250 BK
G102A
C1 Battery
+
-
B110 Battery Monitor Module
A90 Logic
X2 A
850 BK
G130
450 BK
G104
C1B Battery - Auxiliary
B110AX Battery Monitor Module - Auxiliary
2550 BK
5W4/9C1
G405B
K43 Power Steering Control Module
X1 1
350 BK
X405P 1
350 BK
G176B
K69 Transfer Case Control Module
25
6550 BK
LZ0+(NP0/NQH)
G176C
E40 Air Heater
1050 BK
C3A
G202
850 BK
G131
G133
850 BK
G132
G134

## Ground Distribution Schematics (G102B)


X50A
Engine Wiring Harness Junction Block
KR63L
Trailer Stop/ Turn Signal Lamp Relay - Left
KR63R
Trailer Stop/ Turn Signal Lamp Relay - Right
KR125
Trailer Parking Lamp Relay
85
KR73
Ignition Main Relay
86
KR202
Accessory AC and DC Power Control Module Relay
86
KR11
Windshield Washer Pump Relay
KR6
Rear Window Washer Pump Relay
KR12B
Windshield Wiper Motor Relay
KR61
Trailer Backup Lamp Relay
KR200
Engine Controls Sensor Supply Voltage Relay
X1 A4
E13RA
Front Headlamp - Right
K221R
Headlamp LED Driver Module - Right
1
E29RF
Front Fog Lamp - Right
2
E29RF
Front Fog Lamp - Right
2
W15HR
Blunt Cut - Strobe Lamps Right Headlamp
P13
Horn
1
250
BK
J178
T40
-T40
X950 54
X300R 2
5W4/9CL
J171
G102B
B233B
Forward Range Radar Sensor - Long Range
8
B233LF
Short Range Radar Sensor - Left Front
2
1
B233RF
Short Range Radar Sensor - Right Front
3
1
B342A
UHF Low Energy Remote Control Access Sensor Transceiver 1
6
B342C
UHF Low Energy Remote Control Access Sensor Transceiver 3
6
251
BK/WH
UKL
BOR/BOY
J141
X954 4
X950 4
UGN
BOR/BOY/ UKL
J179

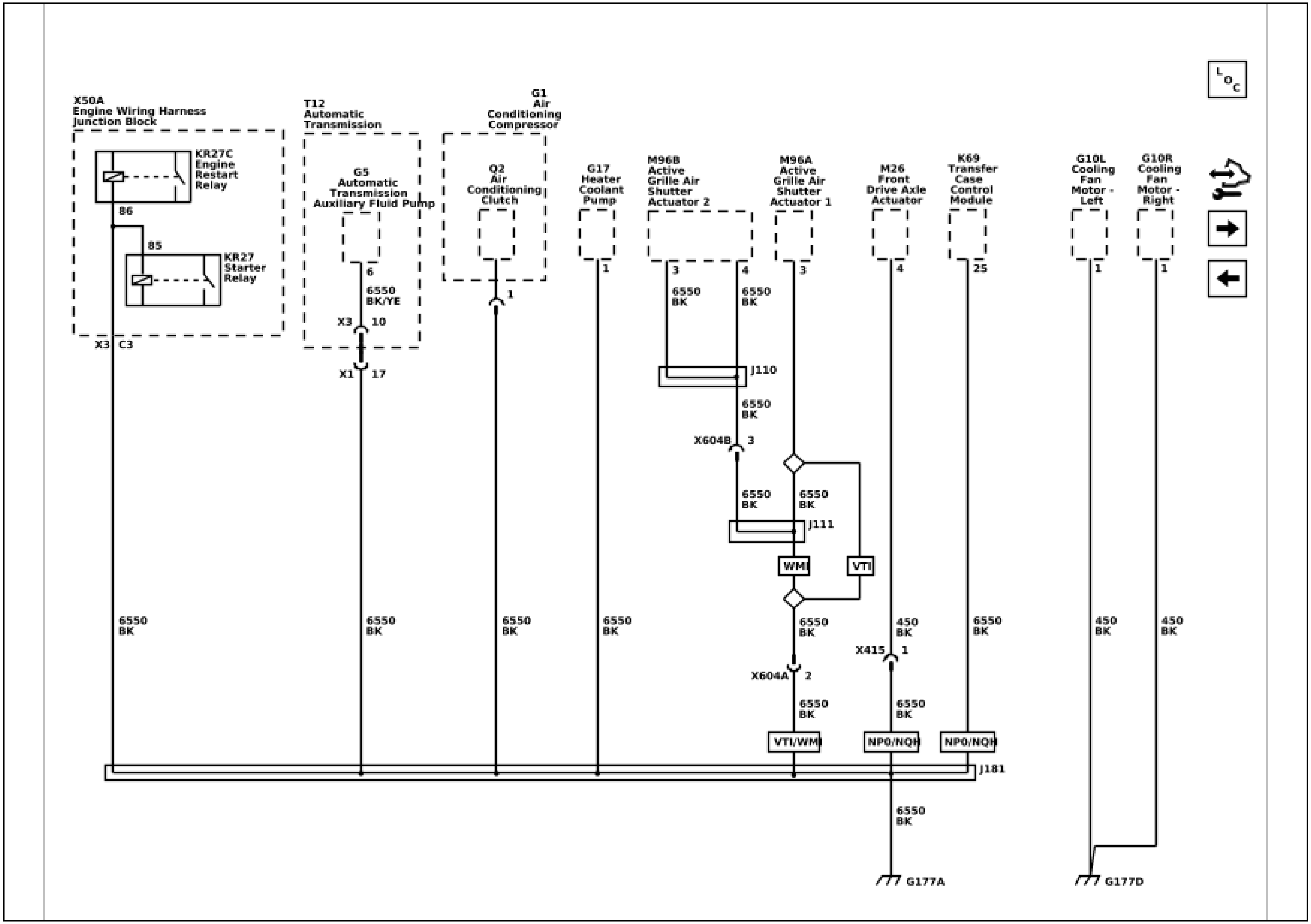
6885661

## Ground Distribution Schematics (G175 and G176A (L84 / L87))

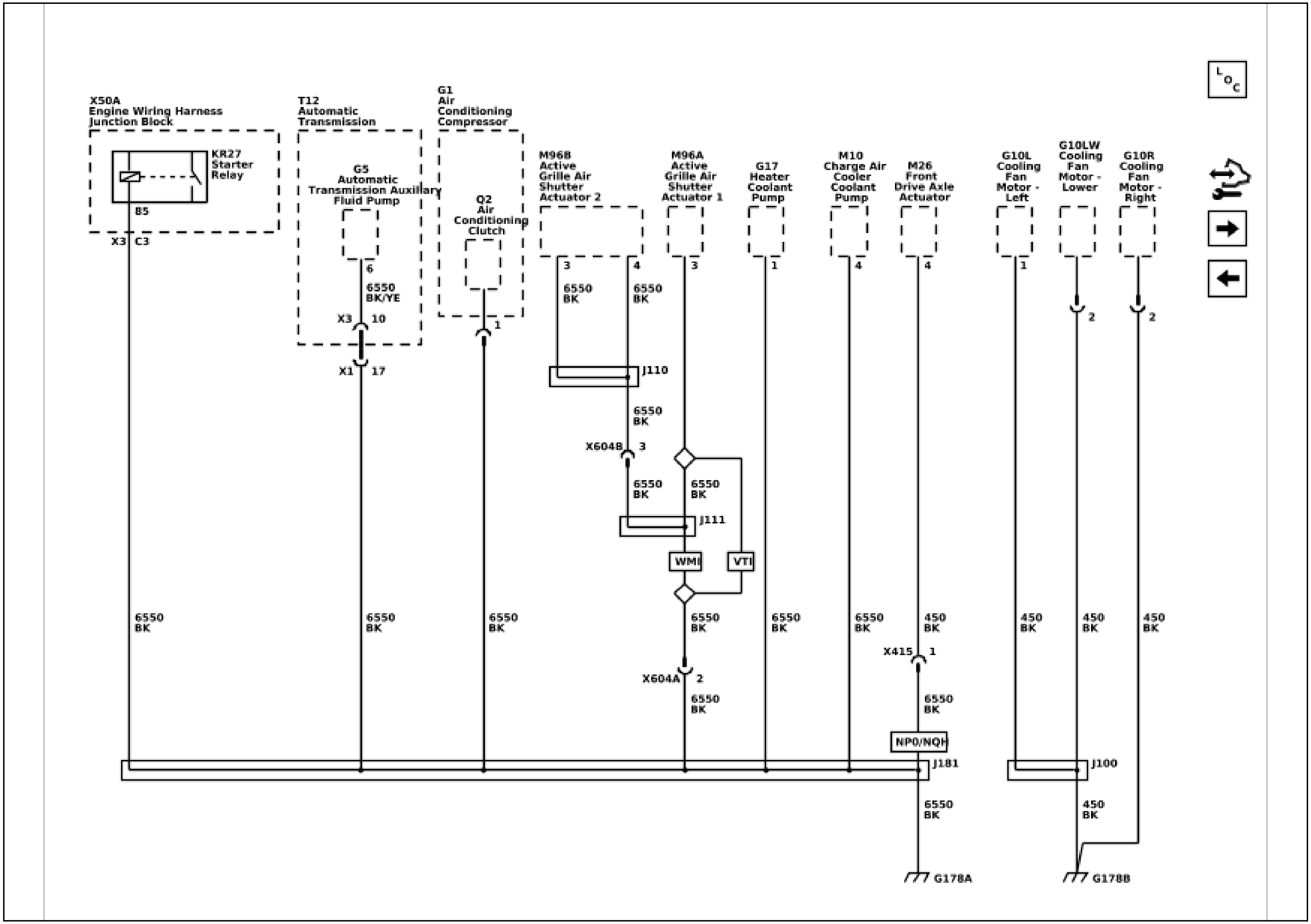

T8A Ignition Coil 1
T8C Ignition Coil 3
T8E Ignition Coil 5
T8G Ignition Coil 7
T8B Ignition Coil 2
T8D Ignition Coil 4
T8F Ignition Coil 6
T8H Ignition Coil 8
1
6150 BK
6450 BK
J156
J165
G175
G176A

6885662

## Ground Distribution Schematics (G177A and G177D (L84 / L87))

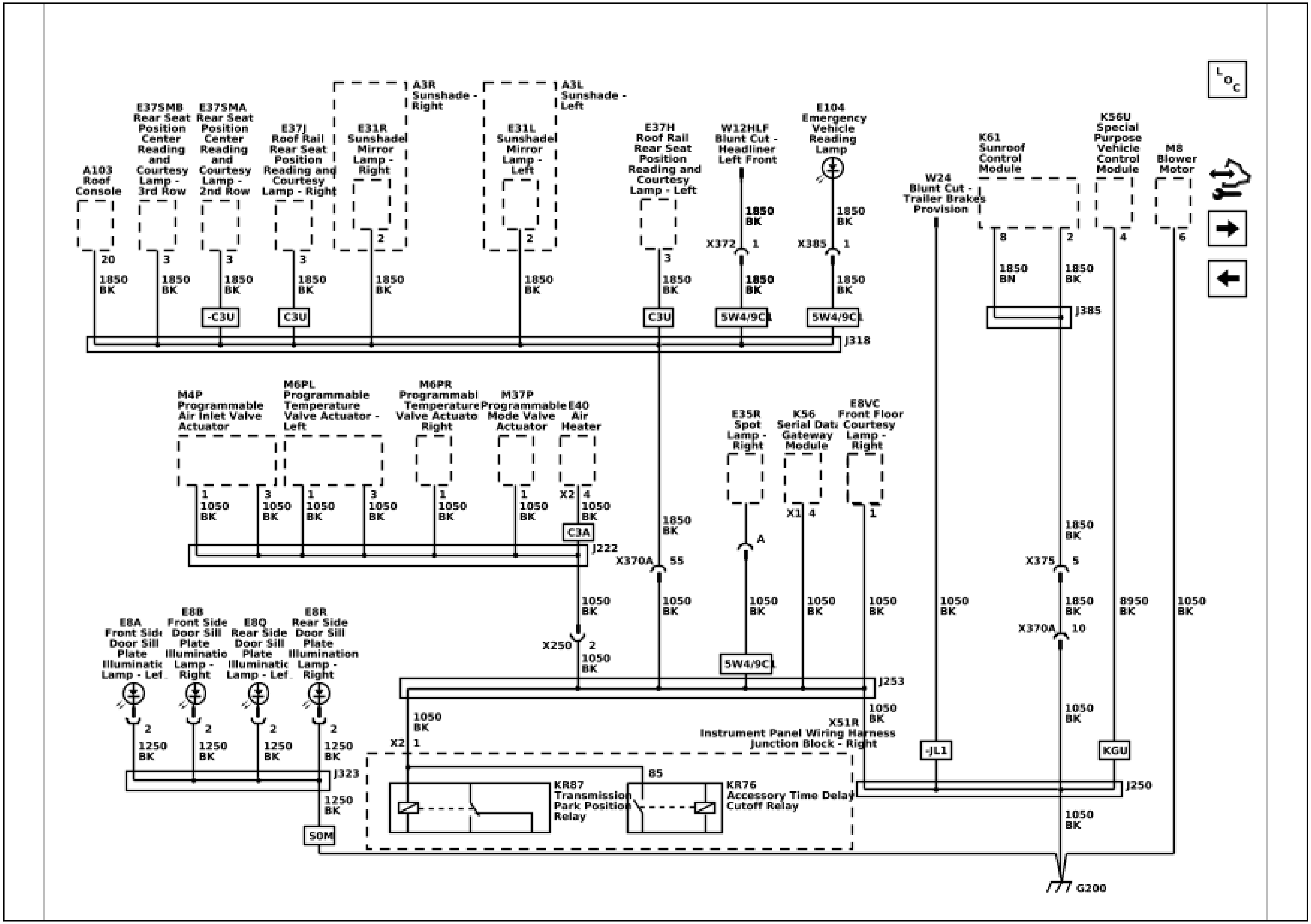

X50A Engine Wiring Harness Junction Block
KR27C Engine Restart Relay
KR27 Starter Relay
86
85
X3 C3
T12 Automatic Transmission
G5 Automatic Transmission Auxiliary Fluid Pump
6
6550 BK/YE
X3 10
X1 17
G1 Air Conditioning Compressor
Q2 Air Conditioning Clutch
1
G17 Heater Coolant Pump
1
M96B Active Grille Air Shutter Actuator 2
3
4
J110
X604B 3
M96A Active Grille Air Shutter Actuator 1
3
J111
WMI
VTI
X604A 2
VTI/WMI
M26 Front Drive Axle Actuator
4
450 BK
X415 1
NP0/NQH
K69 Transfer Case Control Module
25
NP0/NQH
J181
6550 BK
G177A
G10L Cooling Fan Motor - Left
1
G10R Cooling Fan Motor - Right
1
450 BK
G177D
6885663

## Ground Distribution Schematics (G178A and G178B (LZ0))


X50A
Engine Wiring Harness
Junction Block
KR27
Starter
Relay
85
X3 C3
6550
BK
T12
Automatic
Transmission
G5
Automatic
Transmission Auxiliary
Fluid Pump
6
6550
BK/YE
X3 10
X1 17
6550
BK
G1
Air
Conditioning
Compressor
Q2
Air
Conditioning
Clutch
1
6550
BK
M96B
Active
Grille Air
Shutter
Actuator 2
3
4
6550
BK
6550
BK
J110
6550
BK
X604B 3
6550
BK
J111
M96A
Active
Grille Air
Shutter
Actuator 1
3
6550
BK
WMI
VTI
6550
BK
X604A 2
6550
BK
G17
Heater
Coolant
Pump
1
6550
BK
M10
Charge Air
Cooler
Coolant
Pump
4
6550
BK
M26
Front
Drive Axle
Actuator
4
450
BK
X415 1
6550
BK
NP0/NQH
J181
6550
BK
G178A
G10L
Cooling
Fan
Motor -
Left
1
450
BK
G10LW
Cooling
Fan
Motor -
Lower
2
450
BK
G10R
Cooling
Fan
Motor -
Right
2
450
BK
J100
450
BK
G178B

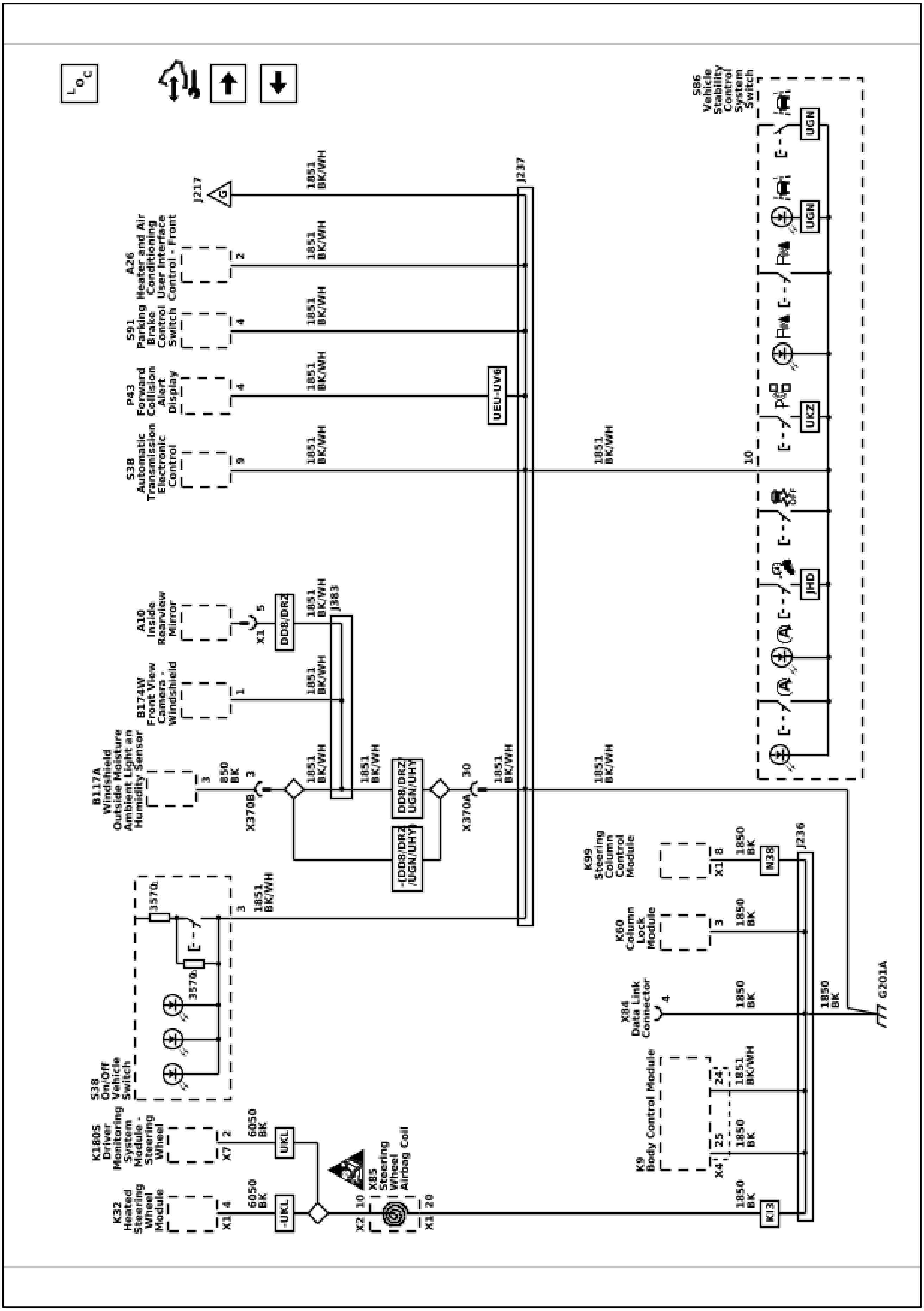
6885664

## Ground Distribution Schematics (G200)

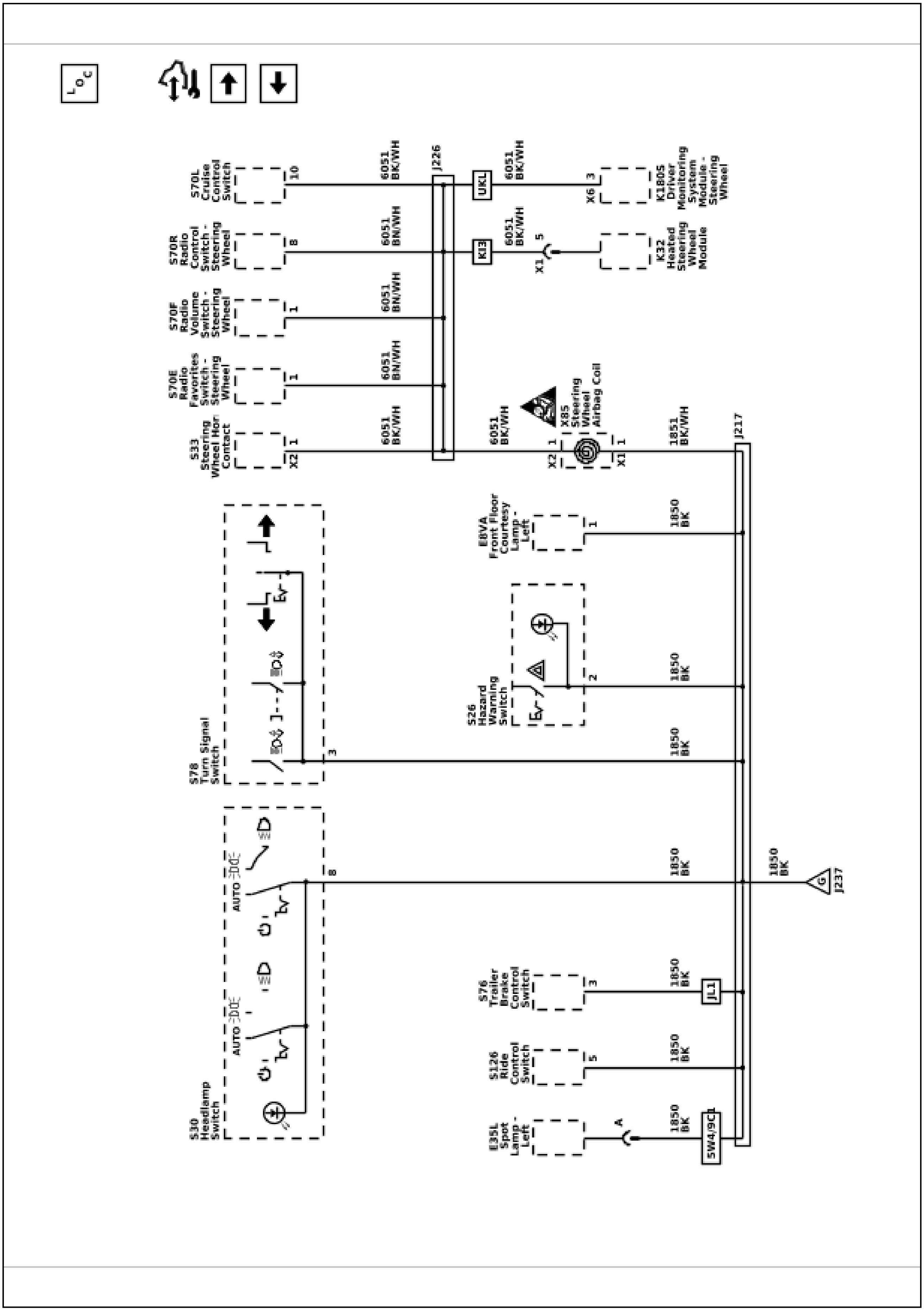

A103 Roof Console
E37SMB Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row
E37SMA Rear Seat Position Center Reading and Courtesy Lamp - 2nd Row
E37J Roof Rail Rear Seat Position Reading and Courtesy Lamp - Right
A3R Sunshade - Right
E31R Sunshade Mirror Lamp - Right
A3L Sunshade - Left
E31L Sunshade Mirror Lamp - Left
E37H Roof Rail Rear Seat Position Reading and Courtesy Lamp - Left
W12HLF Blunt Cut - Headliner Left Front
E104 Emergency Vehicle Reading Lamp
W24 Blunt Cut - Trailer Brakes Provision
K61 Sunroof Control Module
K56U Special Purpose Vehicle Control Module
M8 Blower Motor
20
3
3
3
2
2
3
1
1
8
2
4
6
1850 BK
1850 BN
X372
X385
-C3U
C3U
C3U
5W4/9C1
5W4/9C1
J318
J385
M4P Programmable Air Inlet Valve Actuator
M6PL Programmable Temperature Valve Actuator - Left
M6PR Programmable Temperature Valve Actuator Right
M37P Programmable Mode Valve Actuator
E40 Air Heater
E35R Spot Lamp - Right
K56 Serial Data Gateway Module
E8VC Front Floor Courtesy Lamp - Right
1050 BK
X2 4
X1 4
C3A
J222
A
X370A 55
X375 5
8950 BK
X370A 10
E8A Front Side Door Sill Plate Illumination Lamp - Left
E8B Front Side Door Sill Plate Illumination Lamp - Right
E8Q Rear Side Door Sill Plate Illumination Lamp - Left
E8R Rear Side Door Sill Plate Illumination Lamp - Right
X250 2
5W4/9C1
J253
1250 BK
X2 1
X51R Instrument Panel Wiring Harness Junction Block - Right
-JL1
KGU
J323
85
KR87 Transmission Park Position Relay
KR76 Accessory Time Delay Cutoff Relay
J250
S0M
G200

6885665

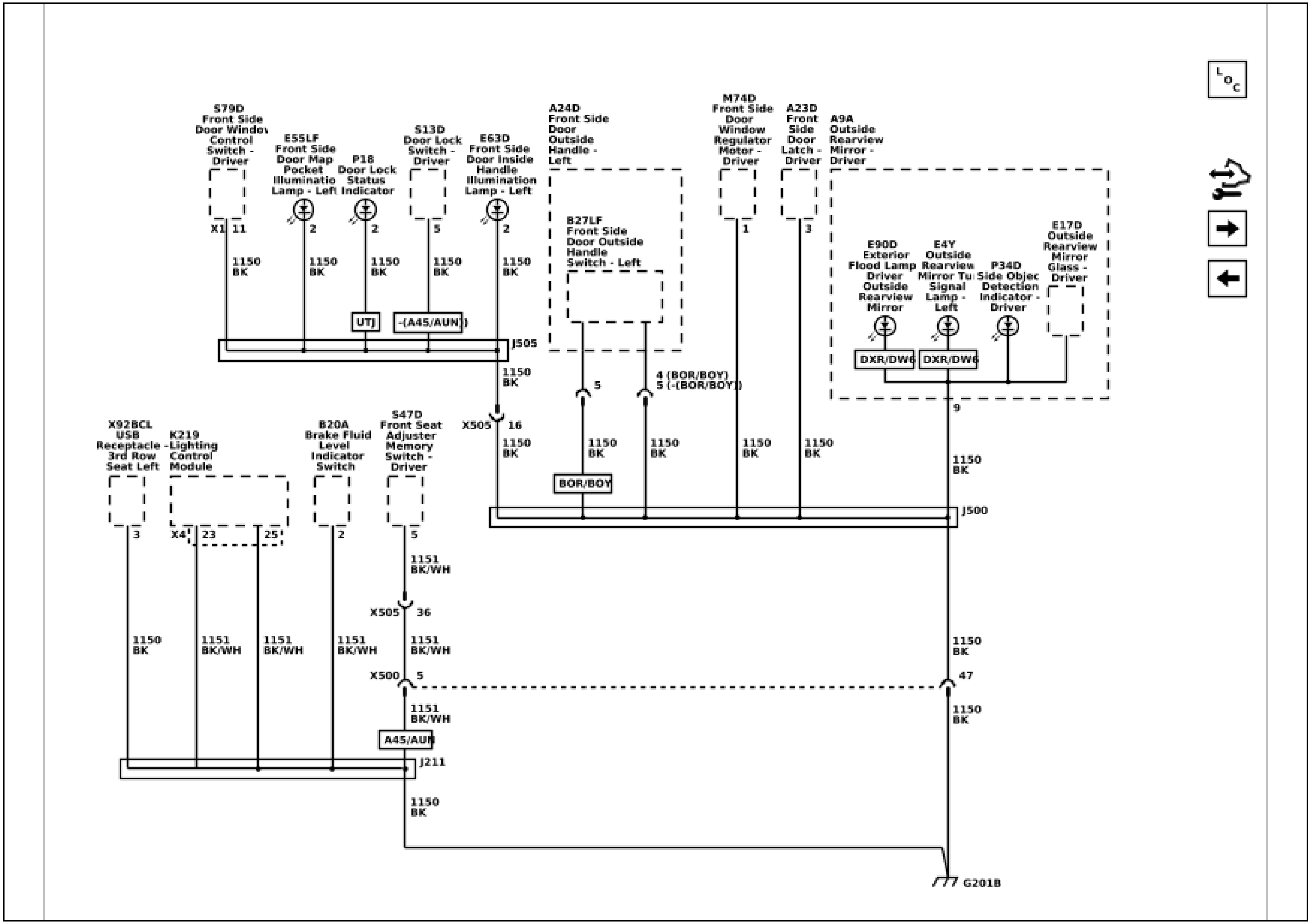
## Ground Distribution Schematics (G201A 1 of 2)


6885666
LOC
J217
G
1851
BK/WH
A26
Heater and Air Conditioning User Interface Control - Front
2
S91
Parking Brake Control Switch
4
P43
Forward Collision Alert Display
4
UEU-UV6
S38
Automatic Transmission Electronic Control
9
J237
10
S86
Vehicle Stability Control System Switch
UGN
UGN
UKZ
JHD
A10
Inside Rearview Mirror
X1
5
DD8/DRZ
J383
B174W
Front View Camera - Windshield
1
B117A
Windshield Outside Moisture Ambient Light an Humidity Sensor
3
850
BK
X370B
DD8/DRZ UGN/UHY
-(DD8/DRZ /UGN/UHY)
X370A
30
S38
On/Off Vehicle Switch
3570Ω
3570Ω
3
K99
Steering Column Control Module
X1
8
1850
BK
N38
J236
K60
Column Lock Module
3
X84
Data Link Connector
4
G201A
K9
Body Control Module
X4
24
25
K1805
Driver Monitoring System Module - Steering Wheel
X7
2
6050
BK
UKL
K32
Heated Steering Wheel Module
X1
4
-UKL
X85
Steering Wheel Airbag Coil
X2
10
X1
20
KI3

## Ground Distribution Schematics (G201A 2 of 2)

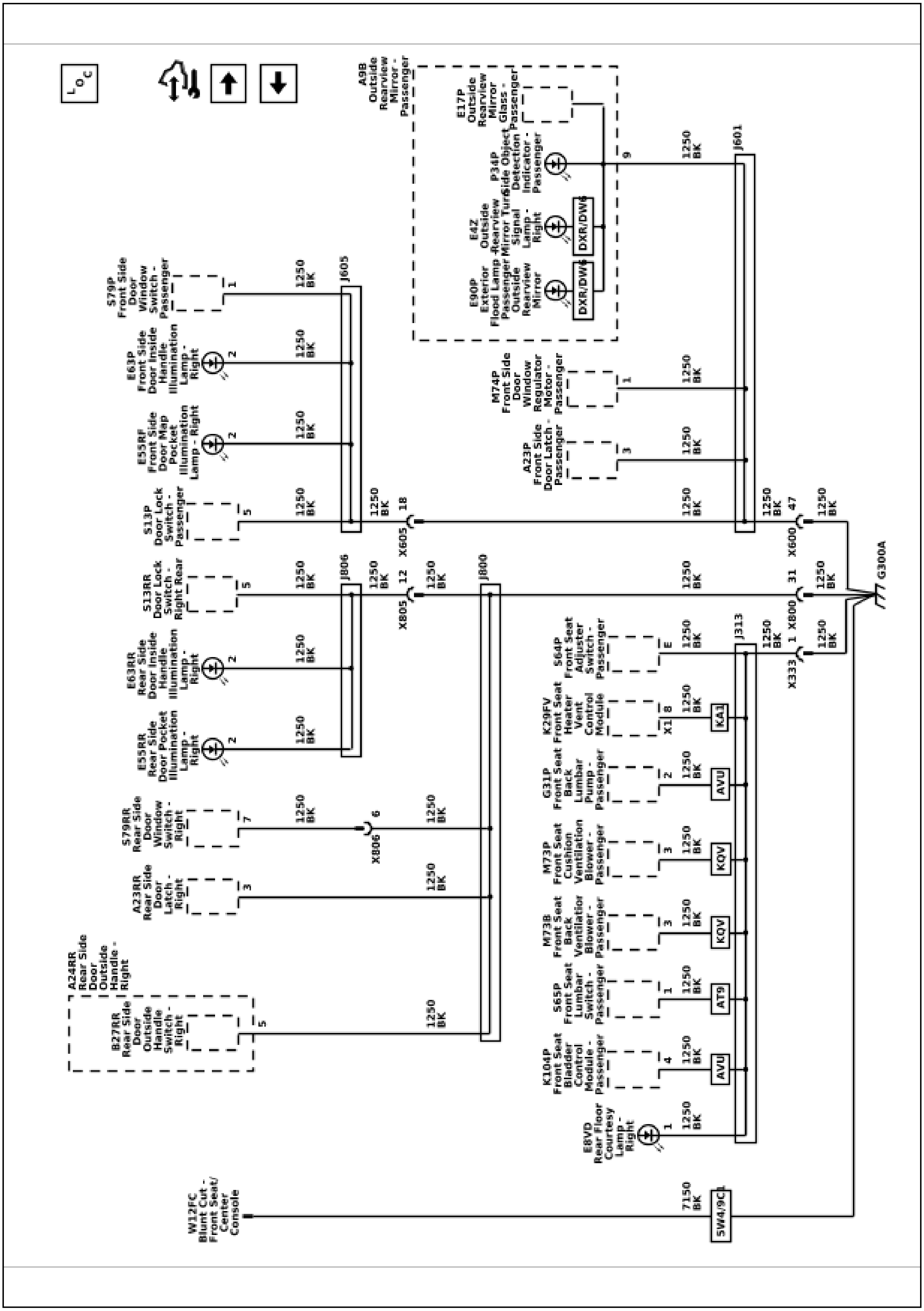

6885667
S70L Cruise Control Switch
10
6051 BK/WH
J226
UKL
6051 BK/WH
X6 3
K180S Driver Monitoring System Module - Steering Wheel
S70R Radio Control Switch - Steering Wheel
8
6051 BN/WH
KI3
6051 BK/WH
X1 5
K32 Heated Steering Wheel Module
S70F Radio Volume Switch - Steering Wheel
1
6051 BN/WH
S70E Radio Favorites Switch - Steering Wheel
1
6051 BN/WH
S33 Steering Wheel Hor Contact
X2 1
6051 BK/WH
6051 BK/WH
X2 1
X85 Steering Wheel Airbag Coil
X1 1
1851 BK/WH
J217
E8VA Front Floor Courtesy Lamp - Left
1
1850 BK
S26 Hazard Warning Switch
2
1850 BK
S78 Turn Signal Switch
3
1850 BK
S30 Headlamp Switch
AUTO
AUTO
8
1850 BK
1850 BK
G
J237
S76 Trailer Brake Control Switch
3
JL1
1850 BK
S126 Ride Control Switch
5
1850 BK
E35L Spot Lamp - Left
A
1850 BK
SW4/9C

## Ground Distribution Schematics (G201B)

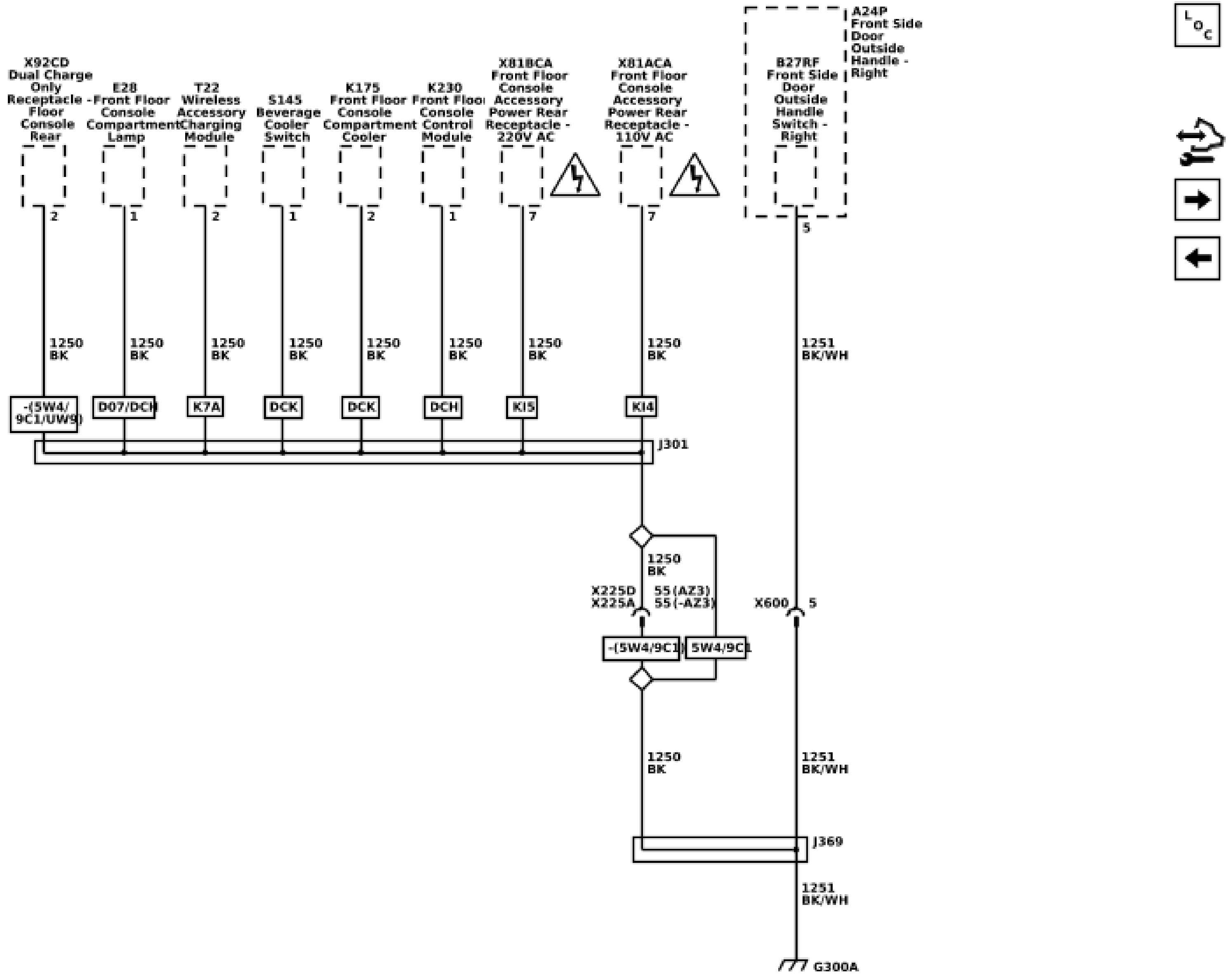

S79D Front Side Door Window Control Switch - Driver
X1 11
E55LF Front Side Door Map Pocket Illumination Lamp - Left
P18 Door Lock Status Indicator
S13D Door Lock Switch - Driver
E63D Front Side Door Inside Handle Illumination Lamp - Left
A24D Front Side Door Outside Handle - Left
B27LF Front Side Door Outside Handle Switch - Left
M74D Front Side Door Window Regulator Motor - Driver
A23D Front Side Door Latch - Driver
A9A Outside Rearview Mirror - Driver
E90D Exterior Flood Lamp Driver Outside Rearview Mirror
E4Y Outside Rearview Mirror Turn Signal Lamp - Left
P34D Side Object Detection Indicator - Driver
E17D Outside Rearview Mirror Glass - Driver
DXR/DW6
DXR/DW6
9
2
2
5
2
1
3
1150 BK
UTJ
-(A45/AUN)
J505
X505 16
5
4 (BOR/BOY)
5 (-(BOR/BOY))
BOR/BOY
J500
X92BCL USB Receptacle - 3rd Row Seat Left
K219 Lighting Control Module
B20A Brake Fluid Level Indicator Switch
S47D Front Seat Adjuster Memory Switch - Driver
3
X4 23
25
2
5
1151 BK/WH
X505 36
X500 5
47
A45/AUN
J211
G201B

6885668

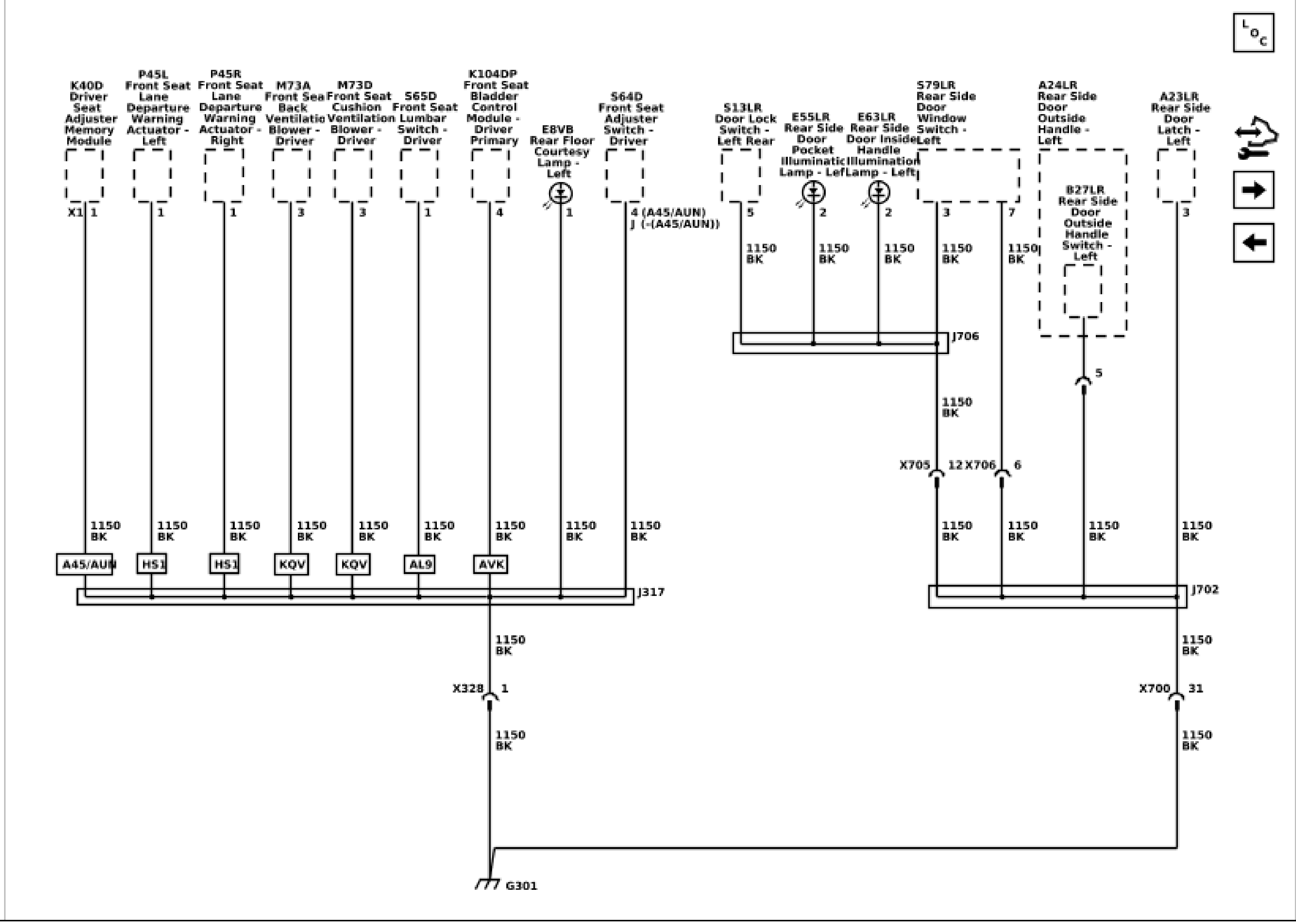
## Ground Distribution Schematics (G300A 1 of 2)


6885669
A9B Outside Rearview Mirror - Passenger
E17P Outside Rearview Mirror Glass - Passenger
P34P Side Object Detection Indicator - Passenger
E4Z Outside Rearview Mirror Turn Signal Lamp - Right
E90P Exterior Flood Lamp - Passenger Outside Rearview Mirror
DXR/DWS
DXR/DWS
9
1250 BK
J601
M74P Front Side Door Window Regulator Motor - Passenger
1
A23P Front Side Door Latch - Passenger
3
S79P Front Side Door Window Switch - Passenger
1
E63P Front Side Door Inside Handle Illumination Lamp - Right
2
E55RF Front Side Door Map Pocket Illumination Lamp - Right
2
S13P Door Lock Switch - Passenger
5
J605
18
X605
47
X600
G300A
S13RR Door Lock Switch - Right Rear
5
J806
12
X805
J800
31
X800
1
X333
E63RR Rear Side Door Inside Handle Illumination Lamp - Right
2
E55RR Rear Side Door Pocket Illumination Lamp - Right
2
S79RR Rear Side Door Window Switch - Right
7
6
X806
A23RR Rear Side Door Latch - Right
3
A24RR Rear Side Door Outside Handle - Right
B27RR Rear Side Door Outside Handle Switch - Right
5
S64P Front Seat Adjuster Switch - Passenger
E
J313
K29FV Front Seat Heater Vent Control Module
X1 8
KA1
G31P Front Seat Back Lumbar Pump - Passenger
2
AVU
M73P Front Seat Cushion Ventilation Blower - Passenger
3
KQV
M73B Front Seat Back Ventilation Blower - Passenger
3
KQV
S65P Front Seat Lumbar Switch - Passenger
1
AT9
K104P Front Seat Bladder Control Module - Passenger
4
AVU
E8VD Rear Floor Courtesy Lamp - Right
1
W12FC Blunt Cut - Front Seat/ Center Console
7150 BK
5W4/9CL
1250 BK

## Ground Distribution Schematics (G300A 2 of 2)

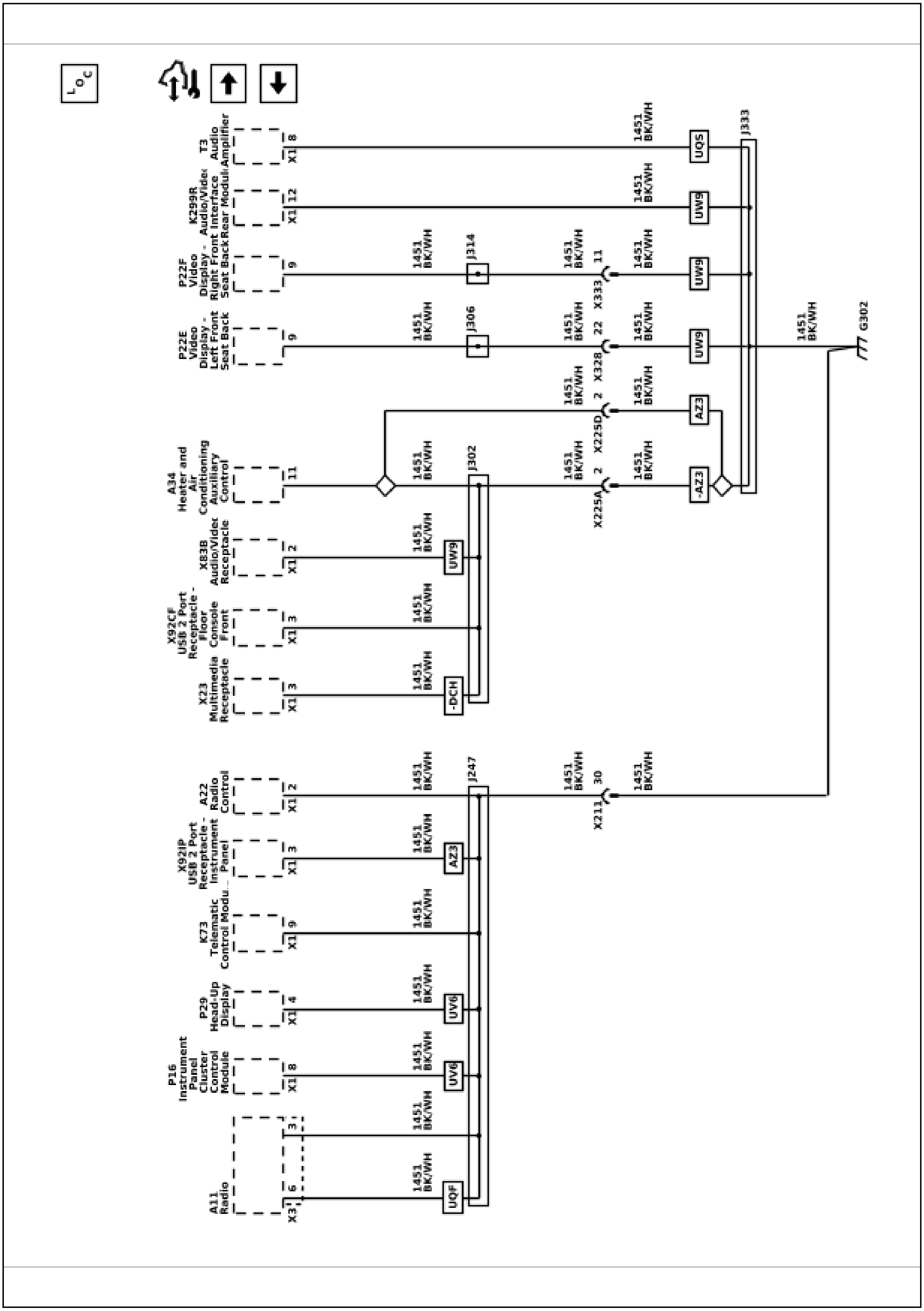

X92CD Dual Charge Only Receptacle - Floor Console Rear
E28 Front Floor Console Compartment Lamp
T22 Wireless Accessory Charging Module
S145 Beverage Cooler Switch
K175 Front Floor Console Compartment Cooler
K230 Front Floor Console Control Module
X81BCA Front Floor Console Accessory Power Rear Receptacle - 220V AC
X81ACA Front Floor Console Accessory Power Rear Receptacle - 110V AC
A24P Front Side Door Outside Handle - Right
B27RF Front Side Door Outside Handle Switch - Right
2
1
2
1
2
1
7
7
5
1250 BK
1251 BK/WH
-(5W4/9C1/UW9)
D07/DCH
K7A
DCK
DCK
DCH
KI5
KI4
J301
X225D X225A
55(AZ3) 55(-AZ3)
-(5W4/9C1)
5W4/9C1
X600
J369
G300A
6885670

## Ground Distribution Schematics (G301)

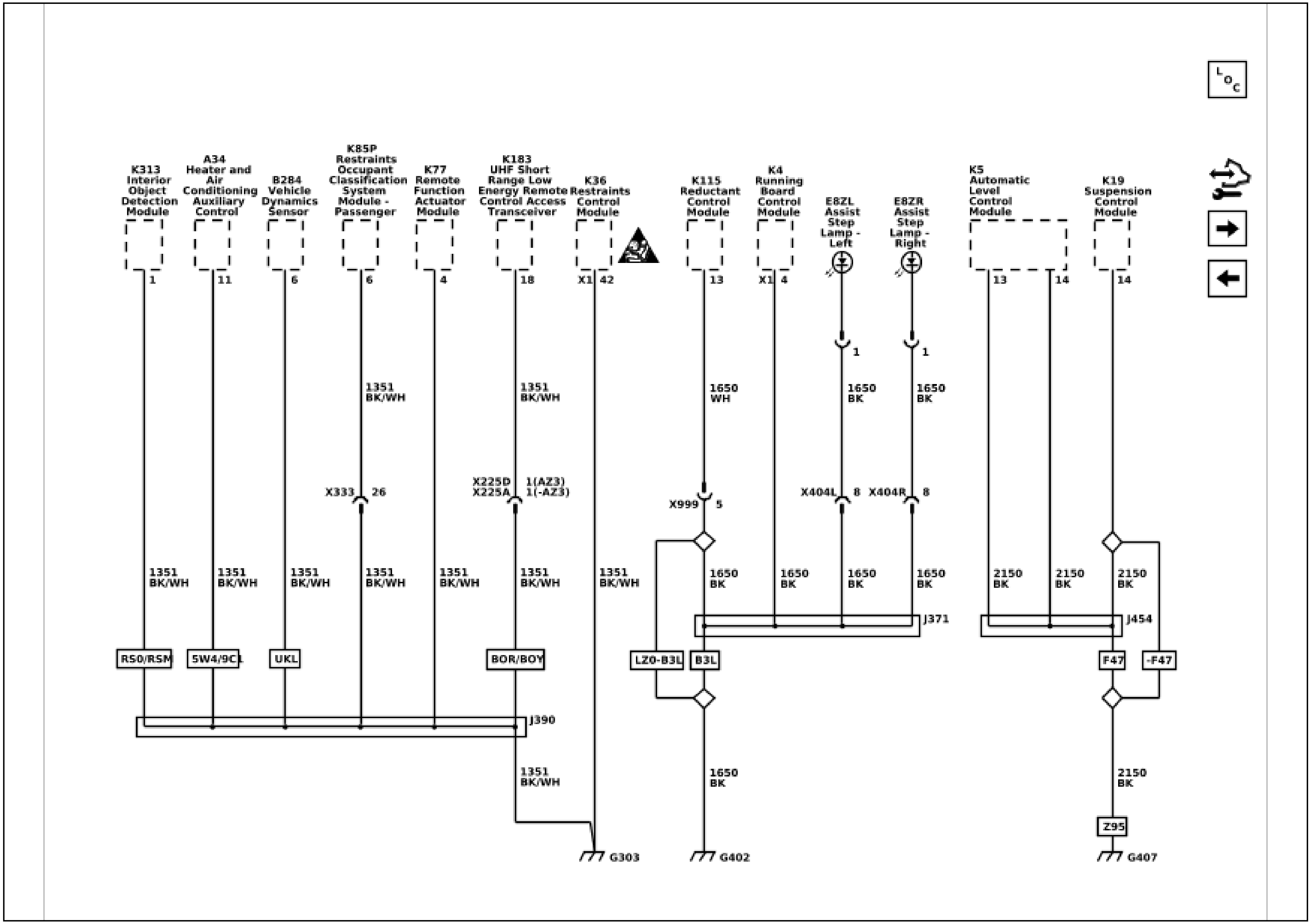

K40D Driver Seat Adjuster Memory Module
X1 1
P45L Front Seat Lane Departure Warning Actuator - Left
1
P45R Front Seat Lane Departure Warning Actuator - Right
1
M73A Front Sea Back Ventilatio Blower - Driver
3
M73D Front Seat Cushion Ventilation Blower - Driver
3
S65D Front Seat Lumbar Switch - Driver
1
K104DP Front Seat Bladder Control Module - Driver Primary
4
E8VB Rear Floor Courtesy Lamp - Left
1
S64D Front Seat Adjuster Switch - Driver
4 (A45/AUN)
J (-(A45/AUN))
S13LR Door Lock Switch - Left Rear
5
E55LR Rear Side Door Pocket Illuminatic Lamp - Lef
2
E63LR Rear Side Door Inside Handle Illumination Lamp - Left
2
S79LR Rear Side Door Window Switch - Left
3
7
A24LR Rear Side Door Outside Handle - Left
B27LR Rear Side Door Outside Handle Switch - Left
A23LR Rear Side Door Latch - Left
3
1150 BK
A45/AUN
HS1
HS1
KQV
KQV
AL9
AVK
J317
J706
5
X705
12 X706
6
J702
X328
1
X700
31
G301

6885671

## Ground Distribution Schematics (G302)

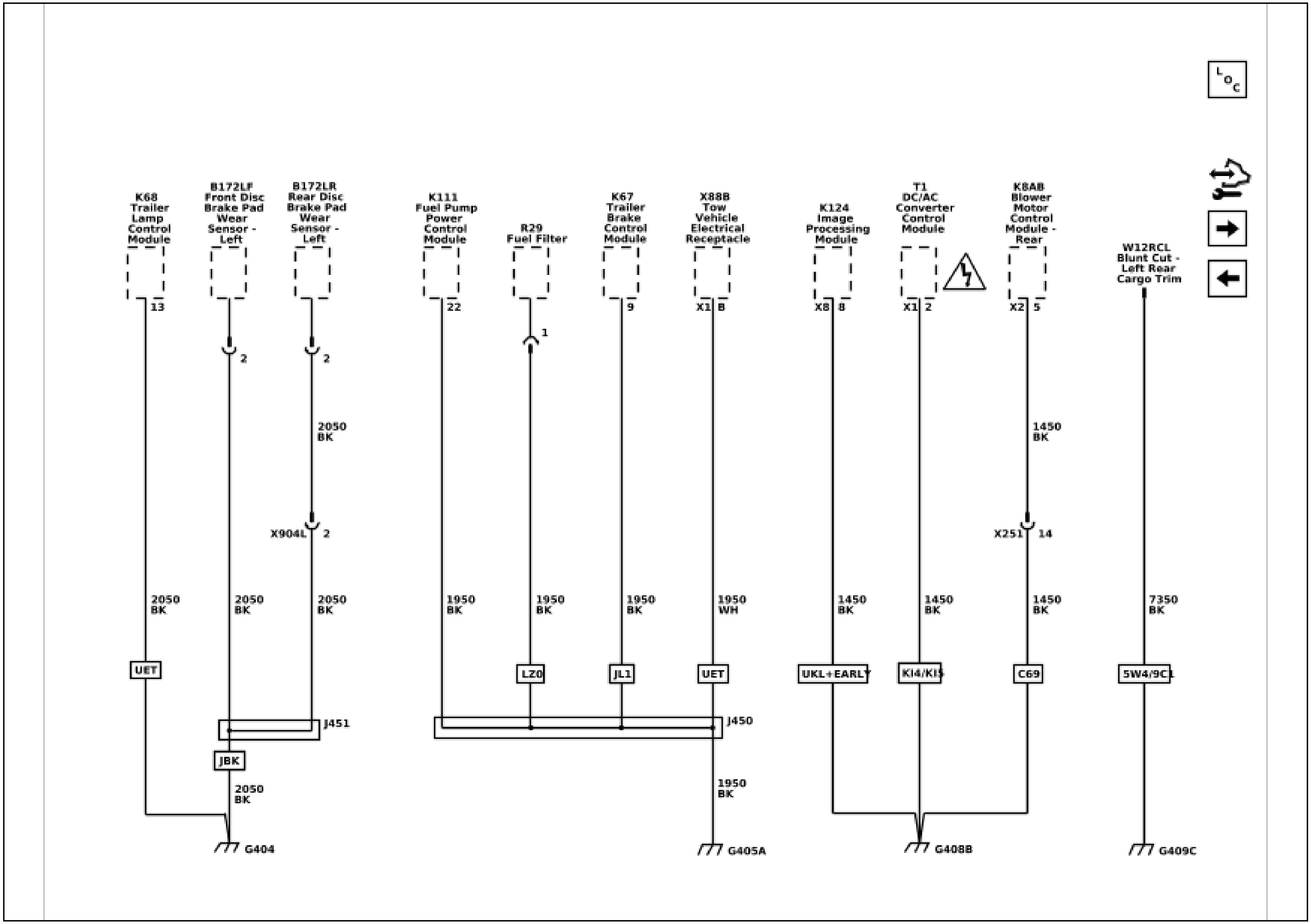

6885672
A11 Radio
X3 6
3
P16 Instrument Panel Cluster Control Module
X1 8
P29 Head-Up Display
X1 4
K73 Telematic Control Modu...
X1 9
X92IP USB 2 Port Receptacle - Instrument Panel
X1 3
A22 Radio Control
X1 2
X23 Multimedia Receptacle
X1 3
X92CF USB 2 Port Receptacle - Floor Console Front
X1 3
X83B Audio/Video Receptacle
X1 2
A34 Heater and Air Conditioning Auxiliary Control
11
P22E Video Display - Left Front Seat Back
9
P22F Video Display - Right Front Seat Back
9
K299R Audio/Video Interface Rear Module
X1 12
T3 Audio Amplifier
X1 8
UQF
UV6
UV6
AZ3
-DCH
UW9
J247
J302
J306
J314
J333
X211 30
X225A 2
X225D 2
X328 22
X333 11
-AZ3
AZ3
UW9
UW9
UW9
UQS
1451 BK/WH
G302

## Ground Distribution Schematics (G303, G402, and G407)


K313 Interior Object Detection Module
A34 Heater and Air Conditioning Auxiliary Control
B284 Vehicle Dynamics Sensor
K85P Restraints Occupant Classification System Module - Passenger
K77 Remote Function Actuator Module
K183 UHF Short Range Low Energy Remote Control Access Transceiver
K36 Restraints Control Module
K115 Reductant Control Module
K4 Running Board Control Module
E8ZL Assist Step Lamp - Left
E8ZR Assist Step Lamp - Right
K5 Automatic Level Control Module
K19 Suspension Control Module
1
11
6
6
4
18
X1 42
13
X1 4
13
14
14
1
1
1351 BK/WH
1650 WH
1650 BK
X333 26
X225D 1(AZ3)
X225A 1(-AZ3)
X999 5
X404L 8
X404R 8
2150 BK
J371
J454
J390
RS0/RSM
5W4/9C1
UKL
BOR/BOY
LZ0-B3L
B3L
F47
-F47
Z95
G303
G402
G407

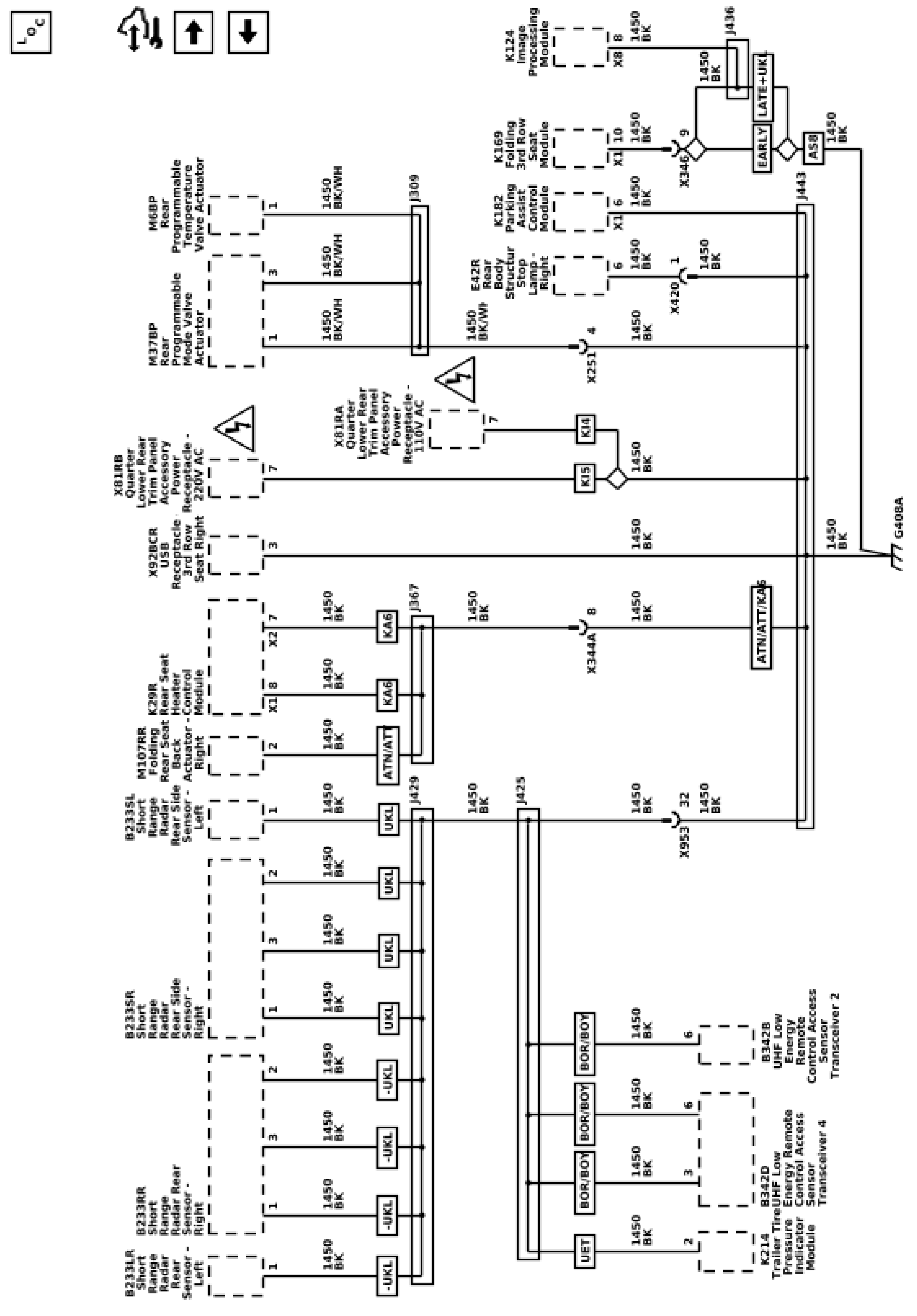
6885673

## Ground Distribution Schematics (G404, G405A, G408B, and G409C)

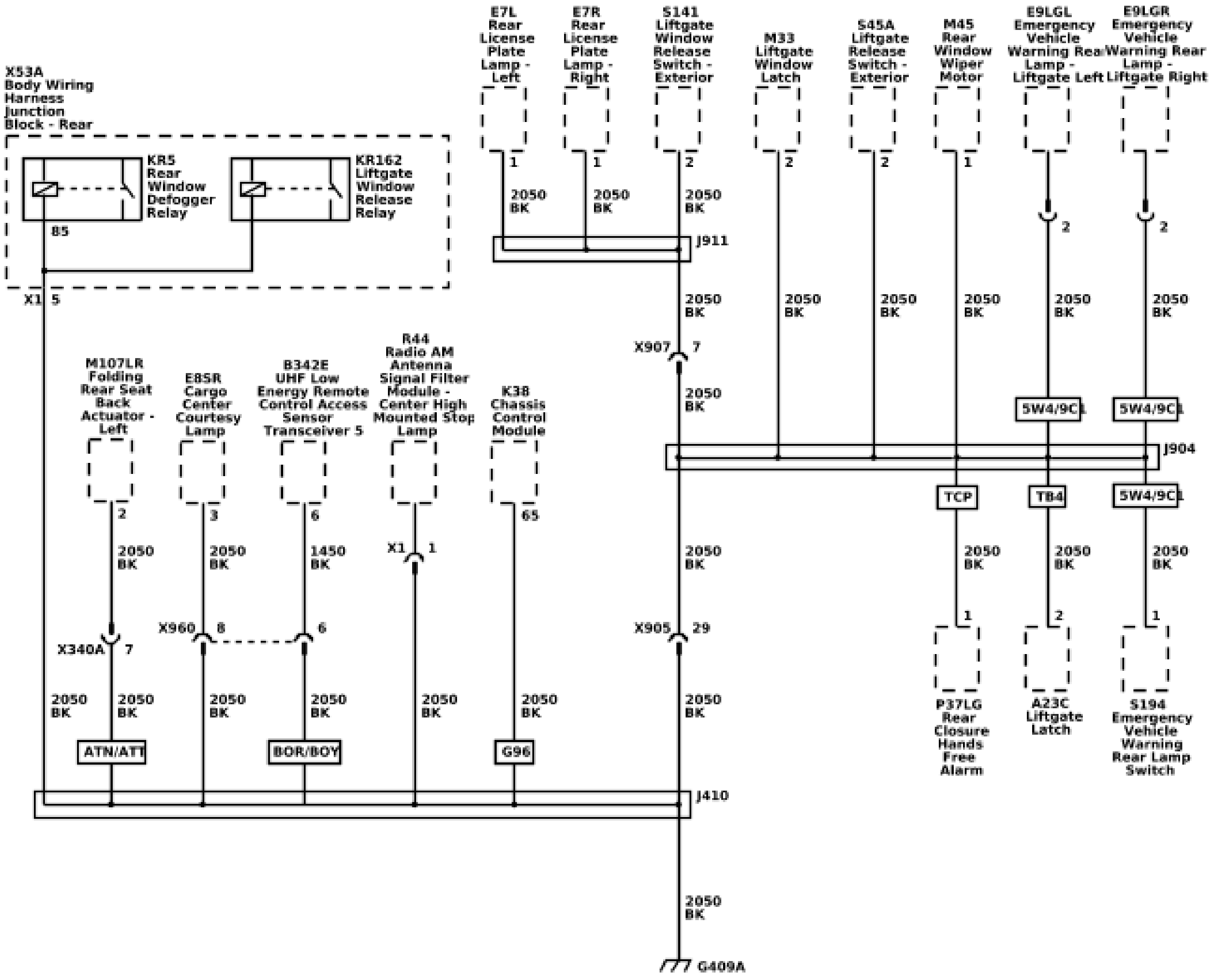

K68
Trailer
Lamp
Control
Module
13
2050
BK
UET
B172LF
Front Disc
Brake Pad
Wear
Sensor -
Left
2
2050
BK
B172LR
Rear Disc
Brake Pad
Wear
Sensor -
Left
2
2050
BK
X904L
2
2050
BK
J451
JBK
2050
BK
G404
K111
Fuel Pump
Power
Control
Module
22
1950
BK
R29
Fuel Filter
1
1950
BK
LZ0
K67
Trailer
Brake
Control
Module
9
1950
BK
JL1
X88B
Tow
Vehicle
Electrical
Receptacle
X1 B
1950
WH
UET
J450
1950
BK
G405A
K124
Image
Processing
Module
X8 8
1450
BK
UKL+EARLY
T1
DC/AC
Converter
Control
Module
X1 2
1450
BK
KI4/KI5
K8AB
Blower
Motor
Control
Module -
Rear
X2 5
1450
BK
X251 14
1450
BK
C69
G408B
W12RCL
Blunt Cut -
Left Rear
Cargo Trim
7350
BK
5W4/9CL
G409C
L O C

6885674

## Ground Distribution Schematics (G408A)

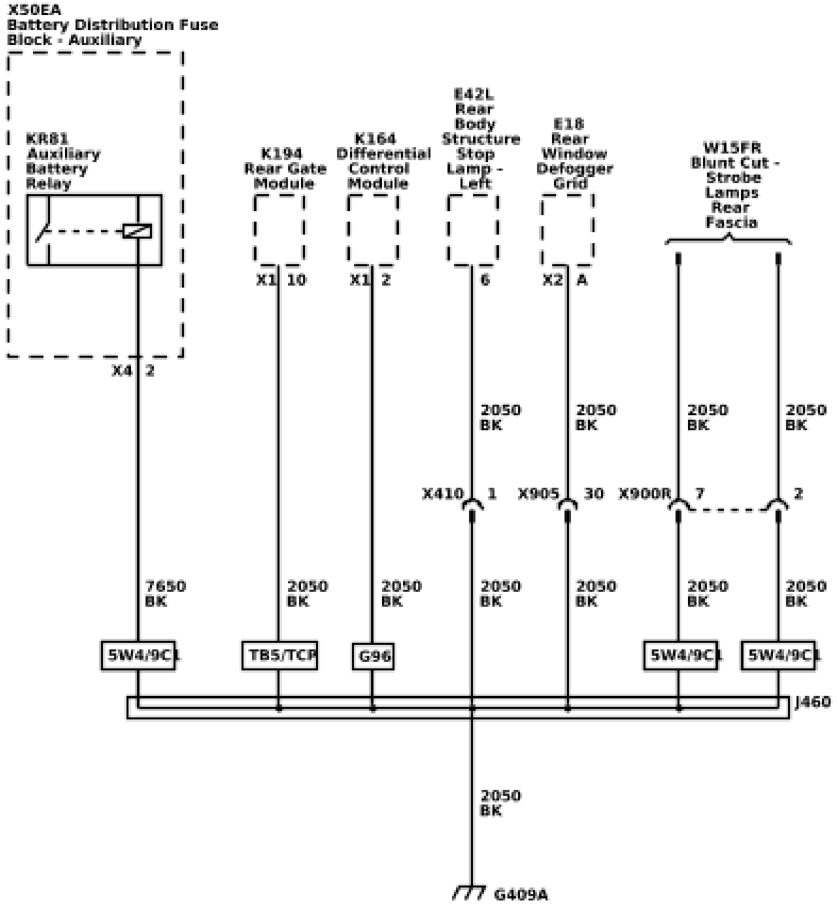

6885675
K124 Image Processing Module
X8 8
1450 BK
J436
LATE+UKL
K169 Folding 3rd Row Seat Module
X1 10
X346 9
EARLY
AS8
K182 Parking Assist Control Module
X1 6
J443
E42R Rear Body Structur Stop Lamp - Right
6
X420 1
M68P Rear Programmable Temperature Valve Actuator
1450 BK/WH
J309
M37BP Rear Programmable Mode Valve Actuator
3
1
X251 4
X81RA Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC
7
KI4
X81RB Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC
KI5
X92BCR USB Receptacle - 3rd Row Seat Right
G408A
K29R Rear Seat Heater Control Module
X2 7
X1 8
KA6
J367
X344A 8
ATN/ATT/KA6
M107RR Folding Rear Seat Back Actuator - Right
2
ATN/ATT
B233SL Short Range Radar Rear Side Sensor - Left
UKL
J429
J425
X953 32
B233SR Short Range Radar Rear Side Sensor - Right
B233RR Short Range Radar Rear Sensor - Right
-UKL
B233LR Short Range Radar Rear Sensor - Left
BOR/BOY
B342B UHF Low Energy Remote Control Access Sensor Transceiver 2
B342D UHF Low Energy Remote Control Access Sensor Transceiver 4
UET
K214 Trailer Tire Pressure Indicator Module

## Ground Distribution Schematics (G409A 1 of 2)


X53A Body Wiring Harness Junction Block - Rear
KR5 Rear Window Defogger Relay
KR162 Liftgate Window Release Relay
85
X1 5
E7L Rear License Plate Lamp - Left
E7R Rear License Plate Lamp - Right
S141 Liftgate Window Release Switch - Exterior
M33 Liftgate Window Latch
S45A Liftgate Release Switch - Exterior
M45 Rear Window Wiper Motor
E9LGL Emergency Vehicle Warning Rear Lamp - Liftgate Left
E9LGR Emergency Vehicle Warning Rear Lamp - Liftgate Right
J911
J904
J410
X907 7
X905 29
5W4/9C1
TCP
TB4
P37LG Rear Closure Hands Free Alarm
A23C Liftgate Latch
S194 Emergency Vehicle Warning Rear Lamp Switch
M107LR Folding Rear Seat Back Actuator - Left
E85R Cargo Center Courtesy Lamp
B342E UHF Low Energy Remote Control Access Sensor Transceiver 5
R44 Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp
K38 Chassis Control Module
X340A 7
X960 8
6
X1 1
65
1450 BK
2050 BK
ATN/ATT
BOR/BOY
G96
G409A

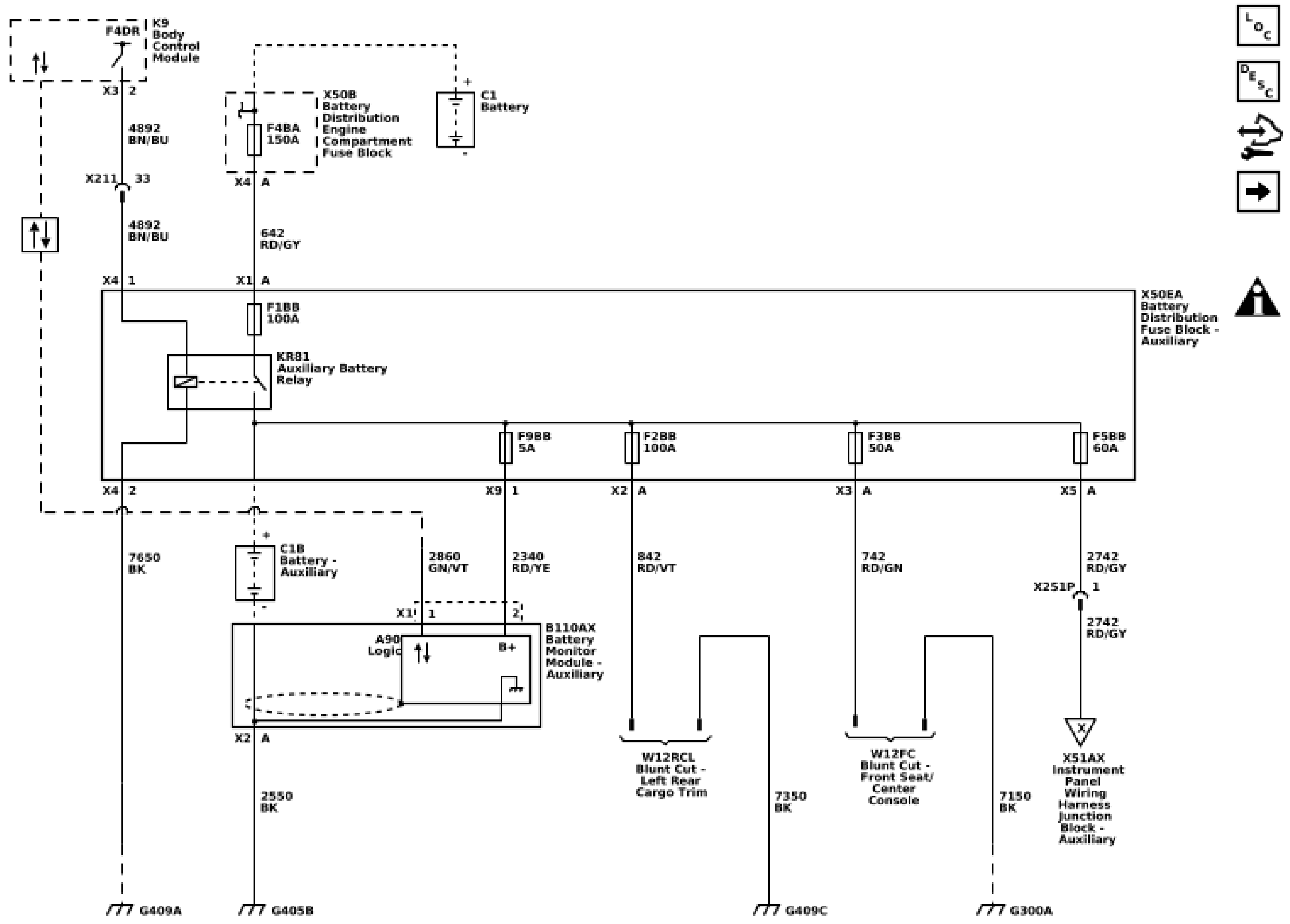
6885676

## Ground Distribution Schematics (G409A 2 of 2)


X50EA
Battery Distribution Fuse Block - Auxiliary
KR81
Auxiliary Battery Relay
X4 2
7650
BK
5W4/9C1
K194
Rear Gate Module
X1 10
2050
BK
TB5/TCP
K164
Differential Control Module
X1 2
2050
BK
G96
E42L
Rear Body Structure Stop Lamp - Left
6
2050
BK
X410 1
2050
BK
E18
Rear Window Defogger Grid
X2 A
2050
BK
X905 30
2050
BK
W15FR
Blunt Cut - Strobe Lamps Rear Fascia
2050
BK
X900R 7
2050
BK
5W4/9C1
2050
BK
2
2050
BK
5W4/9C1
J460
2050
BK
G409A

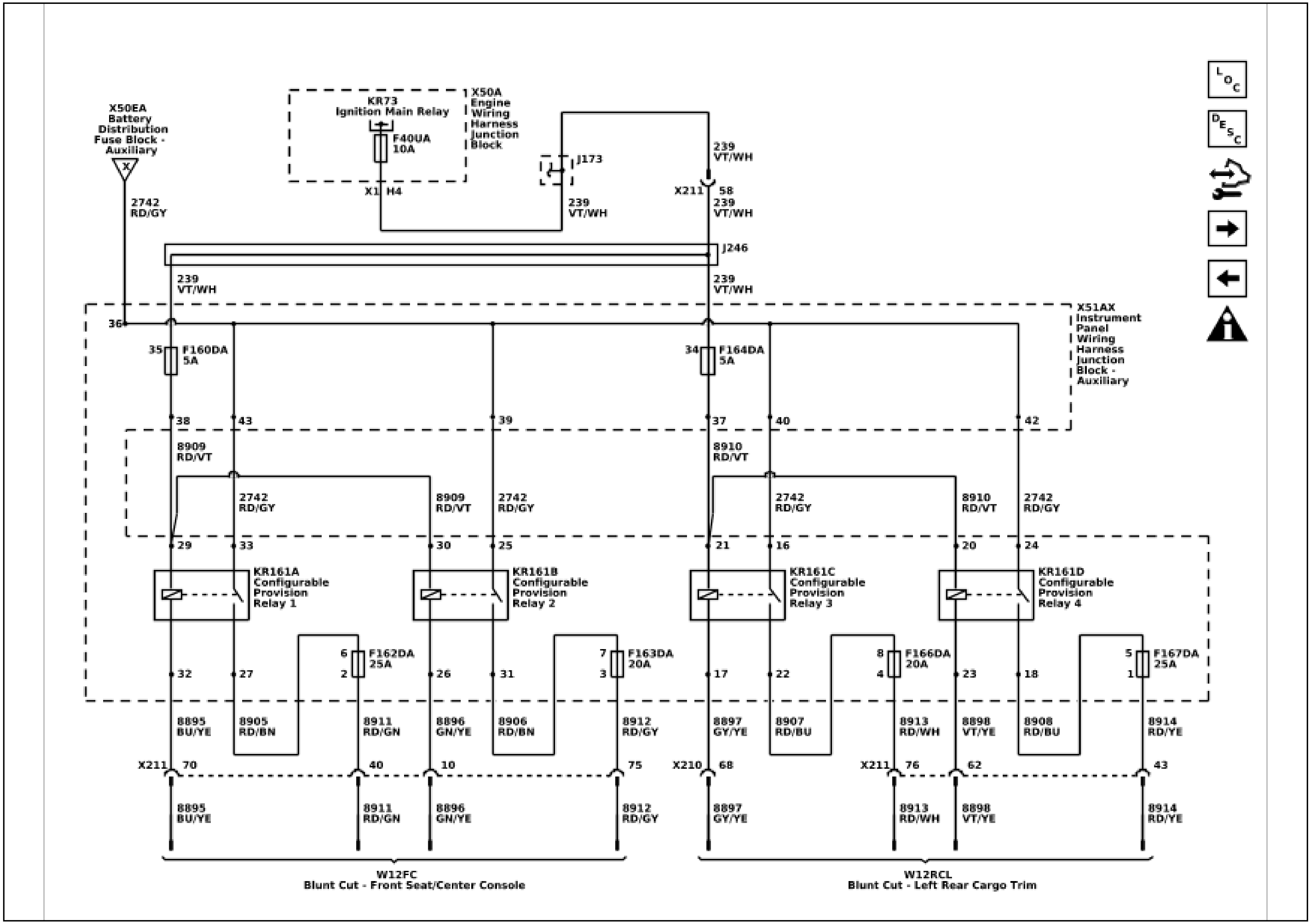
6885677

## Upfitter Provision Schematics (X50EA Battery Distribution Fuse Block - Auxiliary (5W4 / 9C1))

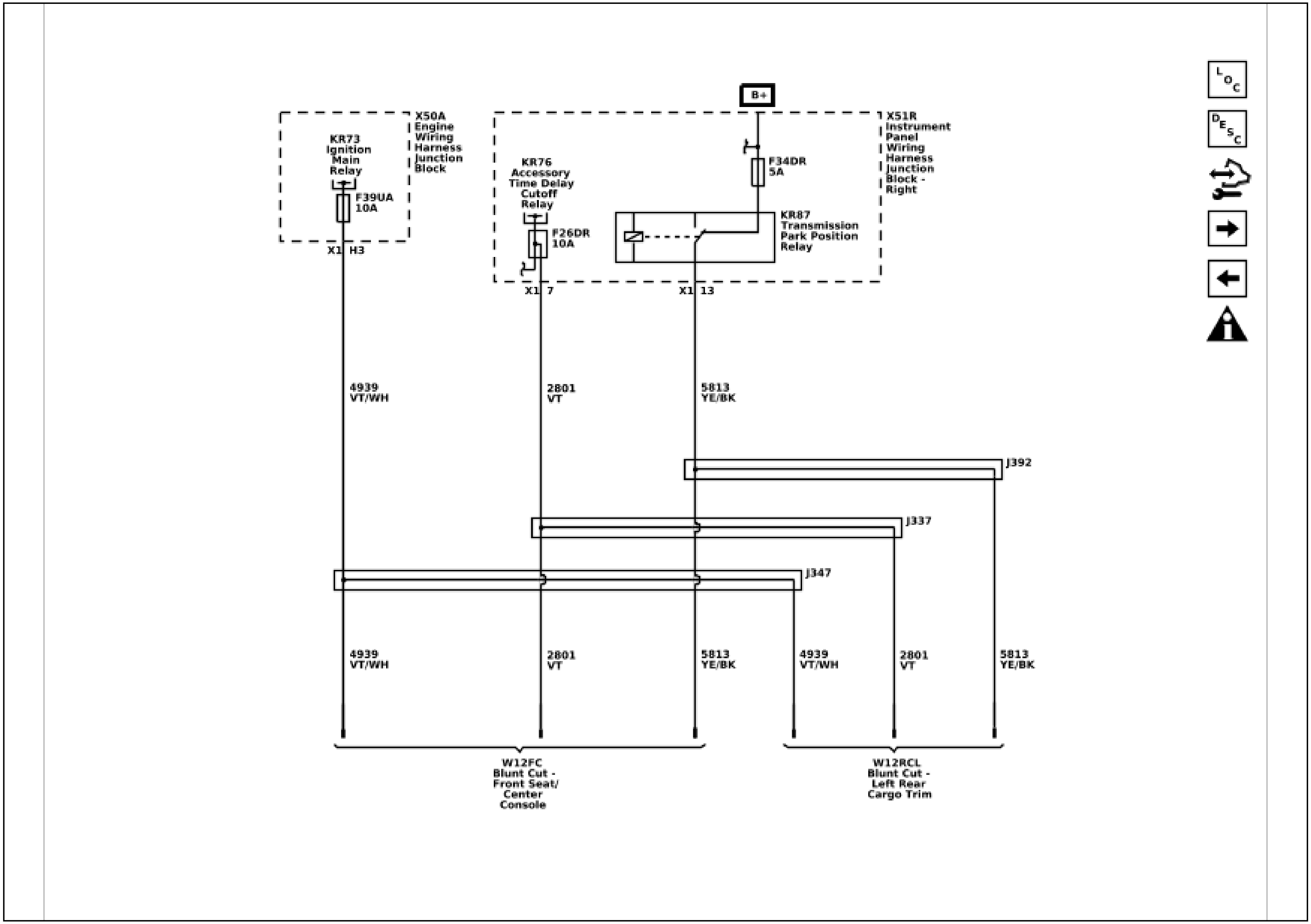

K9 Body Control Module
F4DR
X3 2
4892 BN/BU
X211 33
4892 BN/BU
X4 1
X50B Battery Distribution Engine Compartment Fuse Block
F4BA 150A
X4 A
642 RD/GY
X1 A
C1 Battery
+
-
F1BB 100A
KR81 Auxiliary Battery Relay
X50EA Battery Distribution Fuse Block - Auxiliary
F9BB 5A
F2BB 100A
F3BB 50A
F5BB 60A
X4 2
X9 1
X2 A
X3 A
X5 A
7650 BK
C1B Battery - Auxiliary
2860 GN/VT
2340 RD/YE
842 RD/VT
742 RD/GN
2742 RD/GY
X251P 1
2742 RD/GY
X1 1
2
B110AX Battery Monitor Module - Auxiliary
A90 Logic
B+
X2 A
W12RCL Blunt Cut - Left Rear Cargo Trim
W12FC Blunt Cut - Front Seat/ Center Console
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
2550 BK
7350 BK
7150 BK
G409A
G405B
G409C
G300A
LOC
DESC

6885678

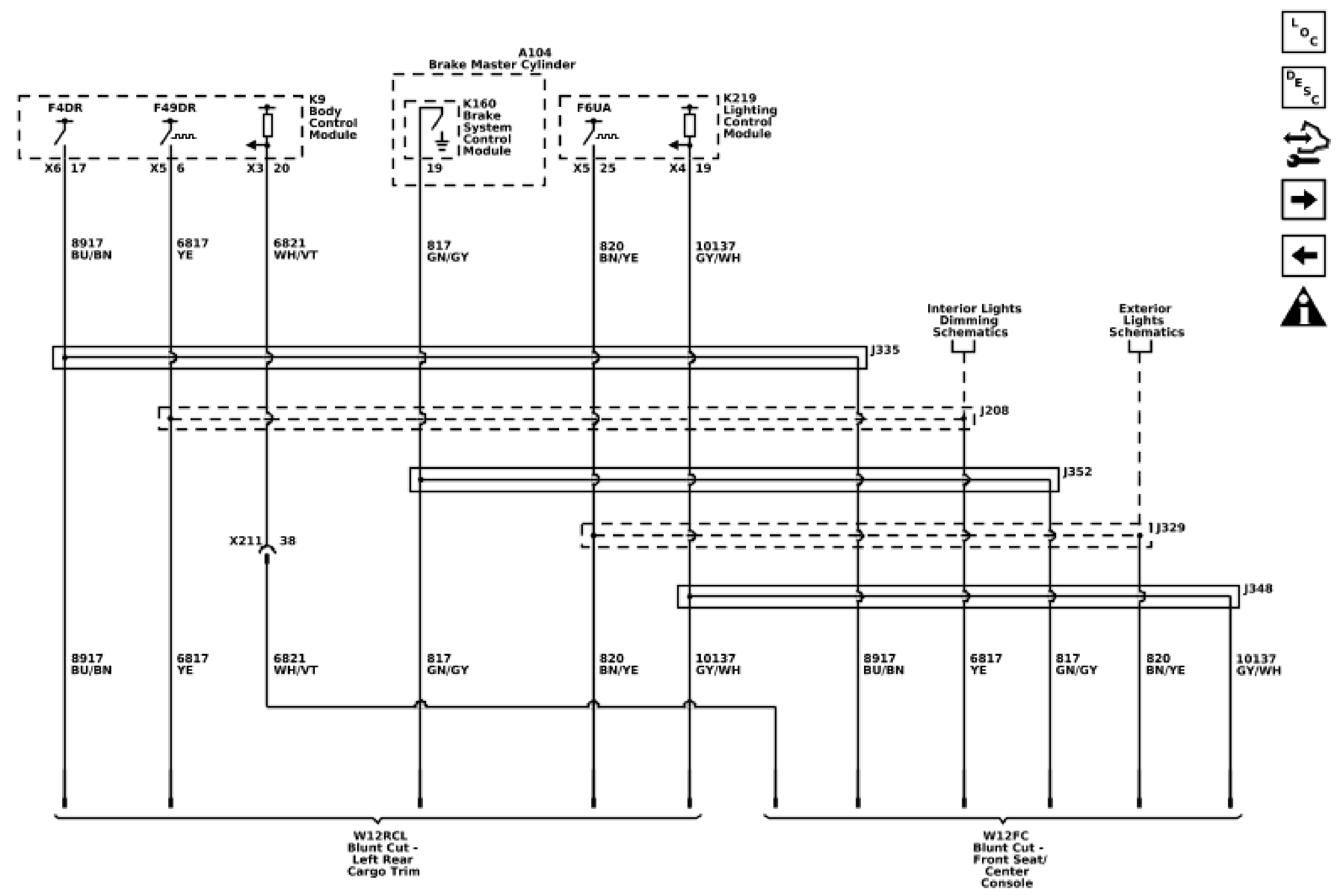
## Upfitter Provision Schematics (X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary (5W4 / 9C1))


X50EA Battery Distribution Fuse Block - Auxiliary
X
2742 RD/GY
KR73 Ignition Main Relay
F40UA 10A
X1 H4
X50A Engine Wiring Harness Junction Block
J173
239 VT/WH
X211 58
J246
X51AX Instrument Panel Wiring Harness Junction Block - Auxiliary
36
35 F160DA 5A
34 F164DA 5A
38
43
39
37
40
42
8909 RD/VT
8910 RD/VT
29
33
30
25
21
16
20
24
KR161A Configurable Provision Relay 1
KR161B Configurable Provision Relay 2
KR161C Configurable Provision Relay 3
KR161D Configurable Provision Relay 4
6 F162DA 25A 2
7 F163DA 20A 3
8 F166DA 20A 4
5 F167DA 25A 1
32
27
26
31
17
22
23
18
8895 BU/YE
8905 RD/BN
8911 RD/GN
8896 GN/YE
8906 RD/BN
8912 RD/GY
8897 GY/YE
8907 RD/BU
8913 RD/WH
8898 VT/YE
8908 RD/BU
8914 RD/YE
X211 70
40
10
75
X210 68
X211 76
62
43
W12FC Blunt Cut - Front Seat/Center Console
W12RCL Blunt Cut - Left Rear Cargo Trim
6885679

## Upfitter Provision Schematics (Vehicle Systems Signals 1 of 2 (5W4 / 9C1))

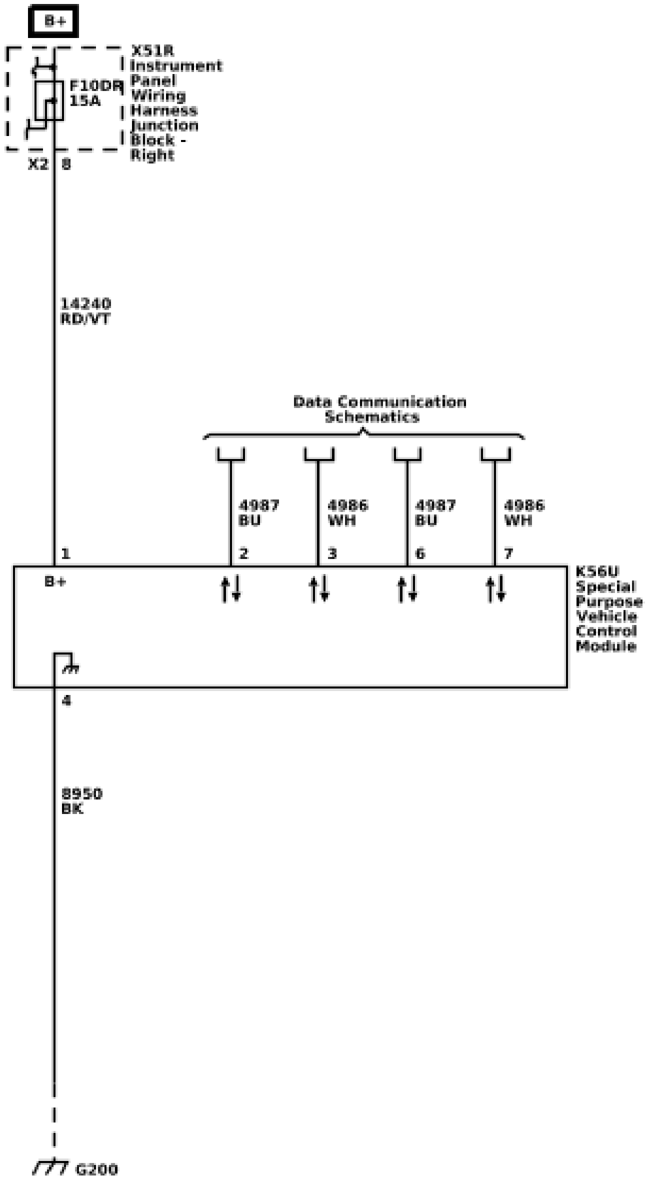

B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F39UA 10A
X1 H3
X51R Instrument Panel Wiring Harness Junction Block - Right
KR76 Accessory Time Delay Cutoff Relay
F26DR 10A
X1 7
F34DR 5A
KR87 Transmission Park Position Relay
X1 13
4939 VT/WH
2801 VT
5813 YE/BK
J392
J337
J347
4939 VT/WH
2801 VT
5813 YE/BK
4939 VT/WH
2801 VT
5813 YE/BK
W12FC Blunt Cut - Front Seat/ Center Console
W12RCL Blunt Cut - Left Rear Cargo Trim
6885680

## Upfitter Provision Schematics (Vehicle Systems Signals 2 of 2 (5W4 / 9C1))


A104
Brake Master Cylinder
F4DR
F49DR
K9
Body
Control
Module
K160
Brake
System
Control
Module
F6UA
K219
Lighting
Control
Module
X6 17
X5 6
X3 20
19
X5 25
X4 19
8917
BU/BN
6817
YE
6821
WH/VT
817
GN/GY
820
BN/YE
10137
GY/WH
Interior Lights
Dimming
Schematics
Exterior
Lights
Schematics
J335
J208
J352
J329
J348
X211 38
W12RCL
Blunt Cut -
Left Rear
Cargo Trim
W12FC
Blunt Cut -
Front Seat/
Center
Console

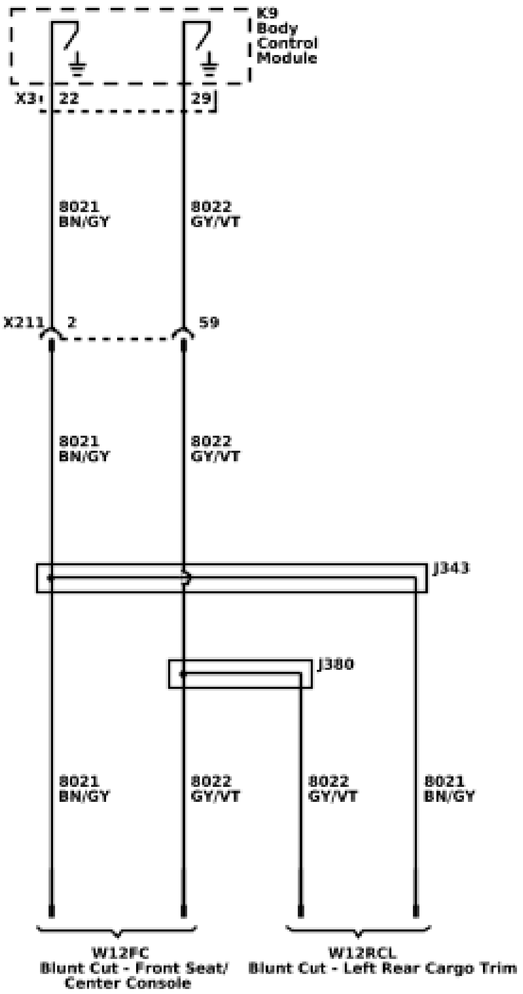
6885681

## Upfitter Provision Schematics (Special Purpose Vehicle Control Module (KGU))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F10DR 15A
X2 8
14240 RD/VT
Data Communication Schematics
4987 BU
4986 WH
4987 BU
4986 WH
1
2
3
6
7
B+
K56U Special Purpose Vehicle Control Module
4
8950 BK
G200

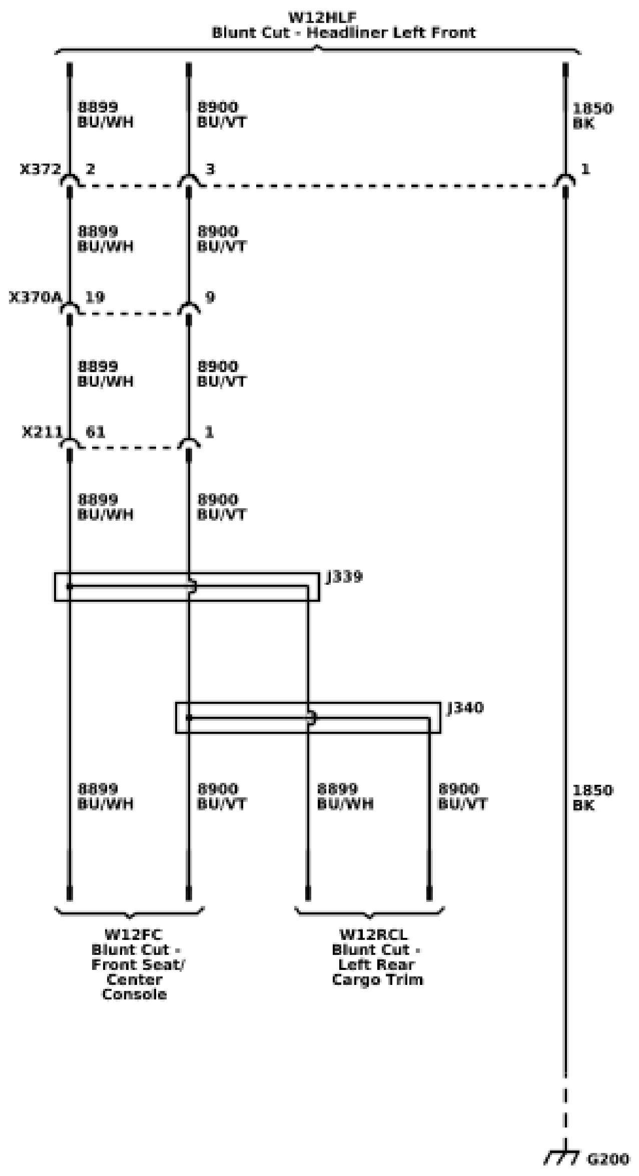
6885682

## Upfitter Provision Schematics (Steering Wheel Switches (5W4 / 9C1))


K9
Body
Control
Module
X3
22
29
8021
BN/GY
8022
GY/VT
X211
2
59
8021
BN/GY
8022
GY/VT
J343
J380
8021
BN/GY
8022
GY/VT
8022
GY/VT
8021
BN/GY
W12FC
Blunt Cut - Front Seat/
Center Console
W12RCL
Blunt Cut - Left Rear Cargo Trim

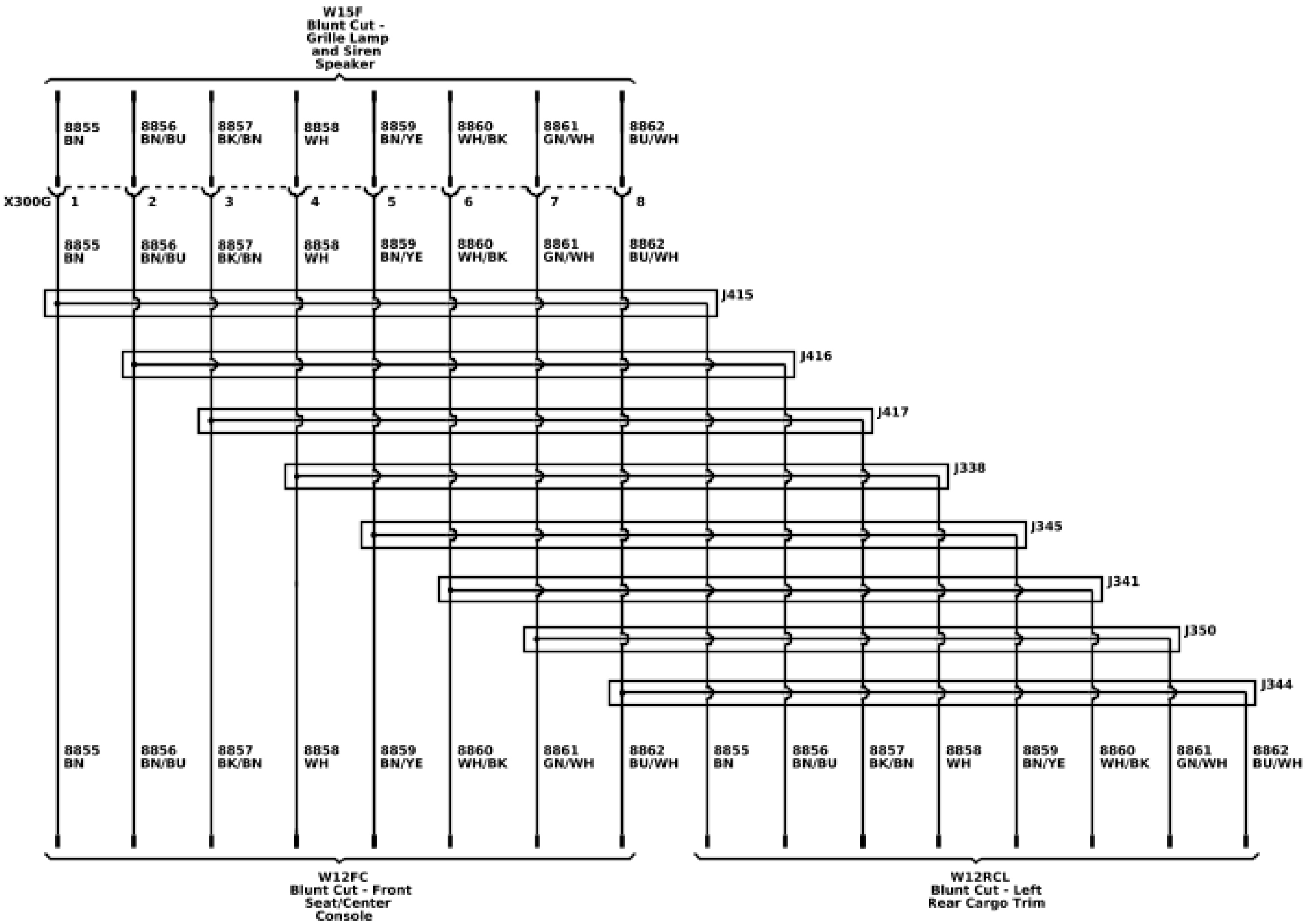
6885683

## Upfitter Provision Schematics (Radio Microphone Provisions (5W4 / 9C1))


W12HLF
Blunt Cut - Headliner Left Front
8899 BU/WH
8900 BU/VT
1850 BK
X372
2
3
1
8899 BU/WH
8900 BU/VT
X370A
19
9
8899 BU/WH
8900 BU/VT
X211
61
1
8899 BU/WH
8900 BU/VT
J339
J340
8899 BU/WH
8900 BU/VT
8899 BU/WH
8900 BU/VT
1850 BK
W12FC
Blunt Cut - Front Seat/ Center Console
W12RCL
Blunt Cut - Left Rear Cargo Trim
G200

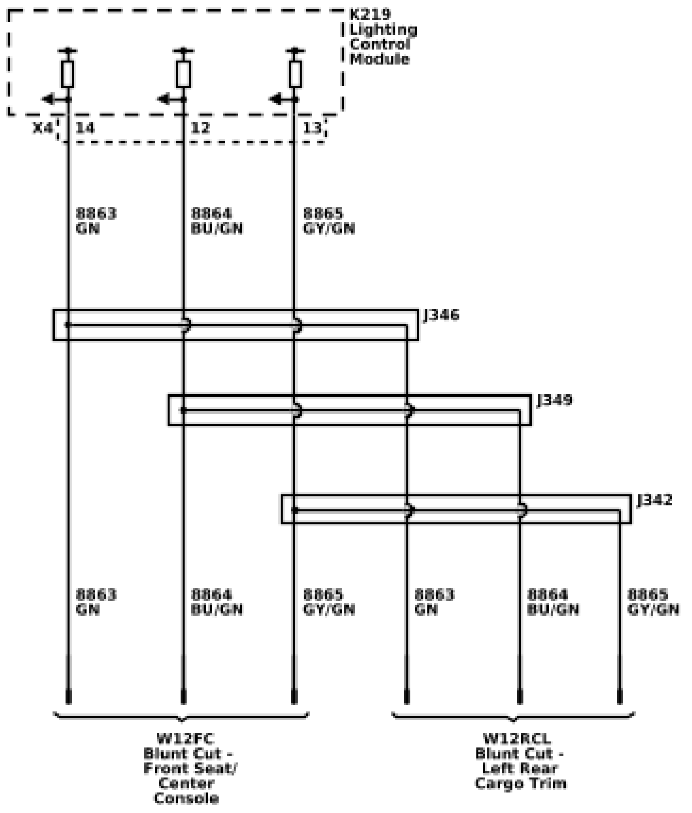
6885684

## Upfitter Provision Schematics (Grille Lamp and Siren Speaker Provisions (5W4 / 9C1))


W15F
Blunt Cut -
Grille Lamp
and Siren
Speaker
8855 BN
8856 BN/BU
8857 BK/BN
8858 WH
8859 BN/YE
8860 WH/BK
8861 GN/WH
8862 BU/WH
X300G
1
2
3
4
5
6
7
8
8855 BN
8856 BN/BU
8857 BK/BN
8858 WH
8859 BN/YE
8860 WH/BK
8861 GN/WH
8862 BU/WH
J415
J416
J417
J338
J345
J341
J350
J344
8855 BN
8856 BN/BU
8857 BK/BN
8858 WH
8859 BN/YE
8860 WH/BK
8861 GN/WH
8862 BU/WH
8855 BN
8856 BN/BU
8857 BK/BN
8858 WH
8859 BN/YE
8860 WH/BK
8861 GN/WH
8862 BU/WH
W12FC
Blunt Cut - Front
Seat/Center
Console
W12RCL
Blunt Cut - Left
Rear Cargo Trim

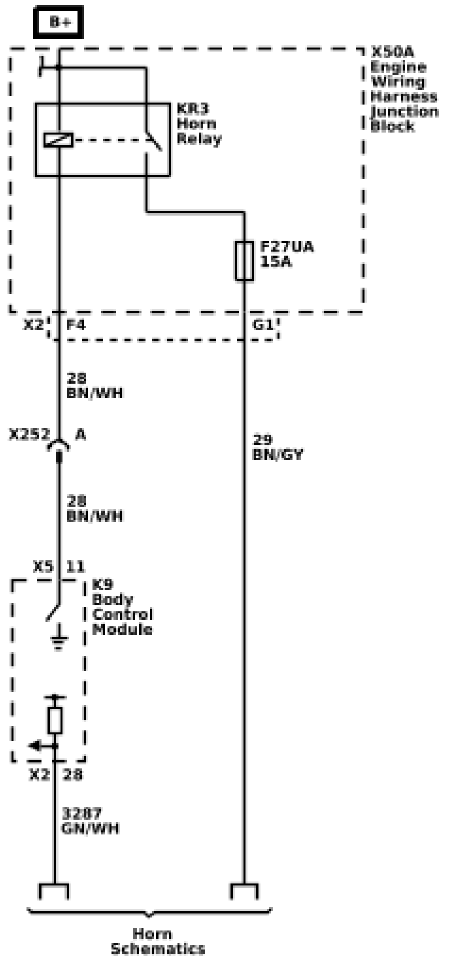
6885685

## Upfitter Provision Schematics (Headlamps and Tail Lamps Flash Provisions (5W4 / 9C1))


K219
Lighting
Control
Module
X4
14
12
13
8863
GN
8864
BU/GN
8865
GY/GN
J346
J349
J342
8863
GN
8864
BU/GN
8865
GY/GN
8863
GN
8864
BU/GN
8865
GY/GN
W12FC
Blunt Cut -
Front Seat/
Center
Console
W12RCL
Blunt Cut -
Left Rear
Cargo Trim

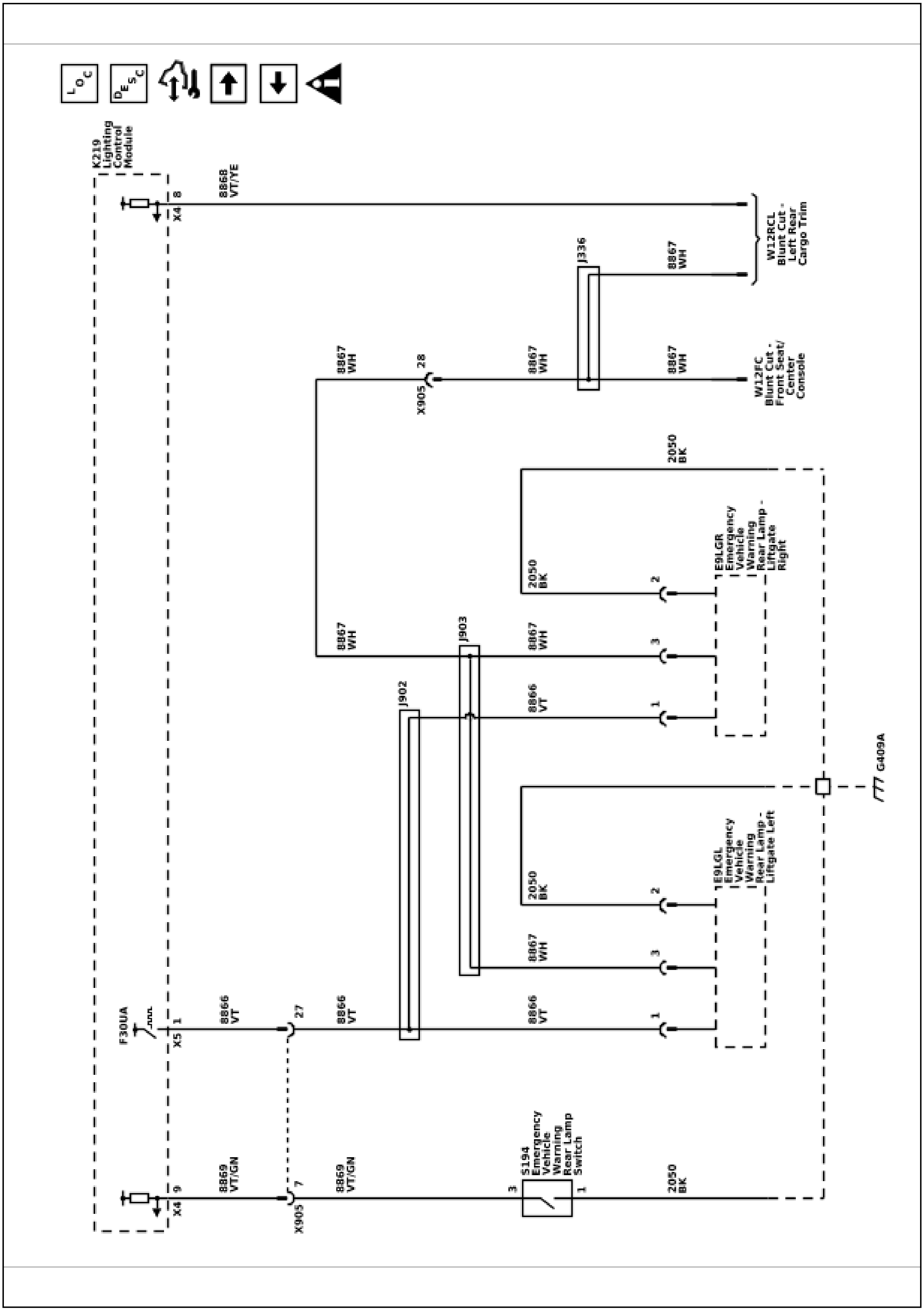
6885686

## Upfitter Provision Schematics (Horn and Siren Control Provision (5W4 / 9C1))

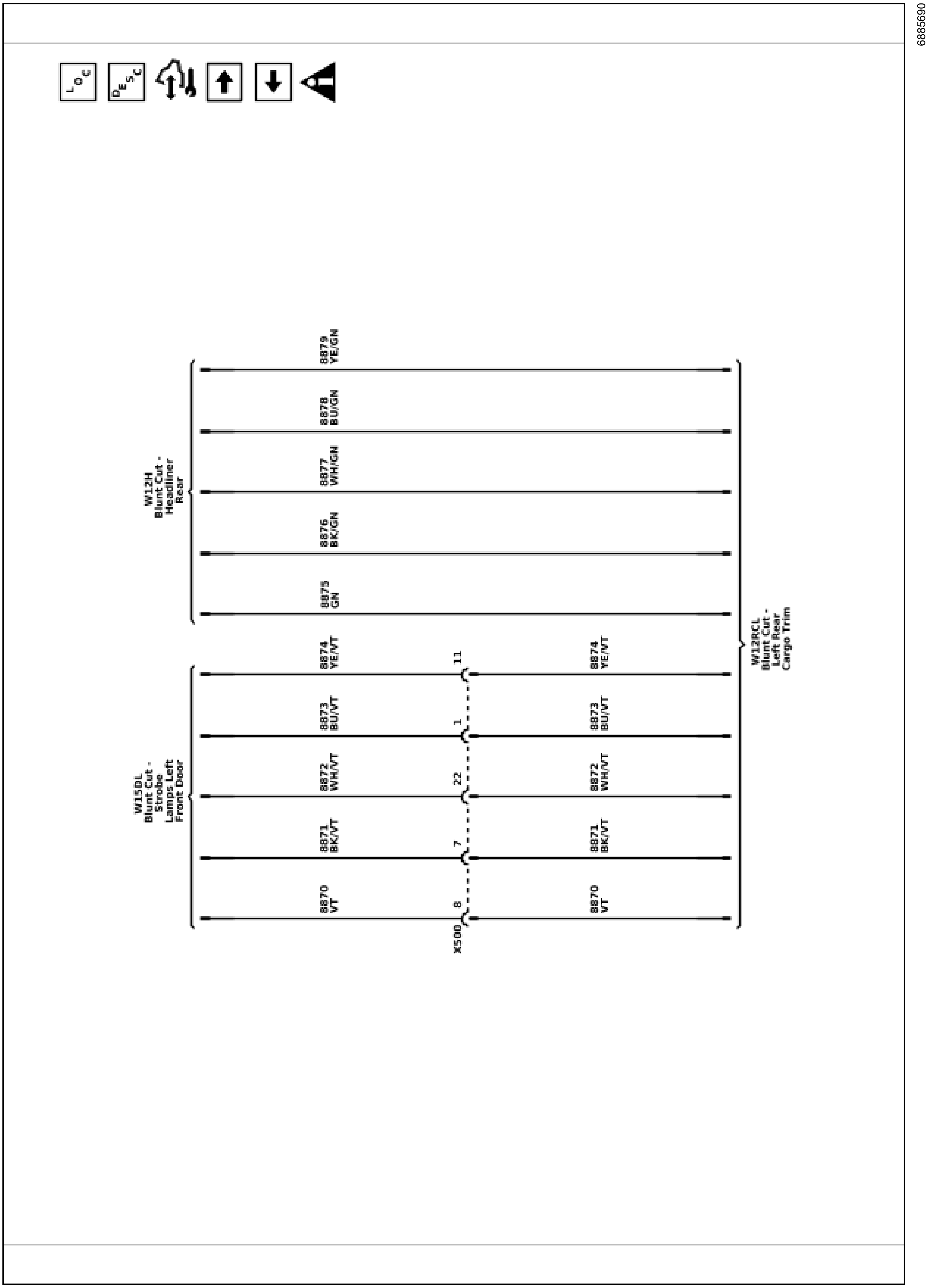

B+
X50A
Engine
Wiring
Harness
Junction
Block
KR3
Horn
Relay
F27UA
15A
X2
F4
G1
28
BN/WH
X252
A
29
BN/GY
28
BN/WH
X5
11
K9
Body
Control
Module
X2
28
3287
GN/WH
Horn
Schematics

6885688

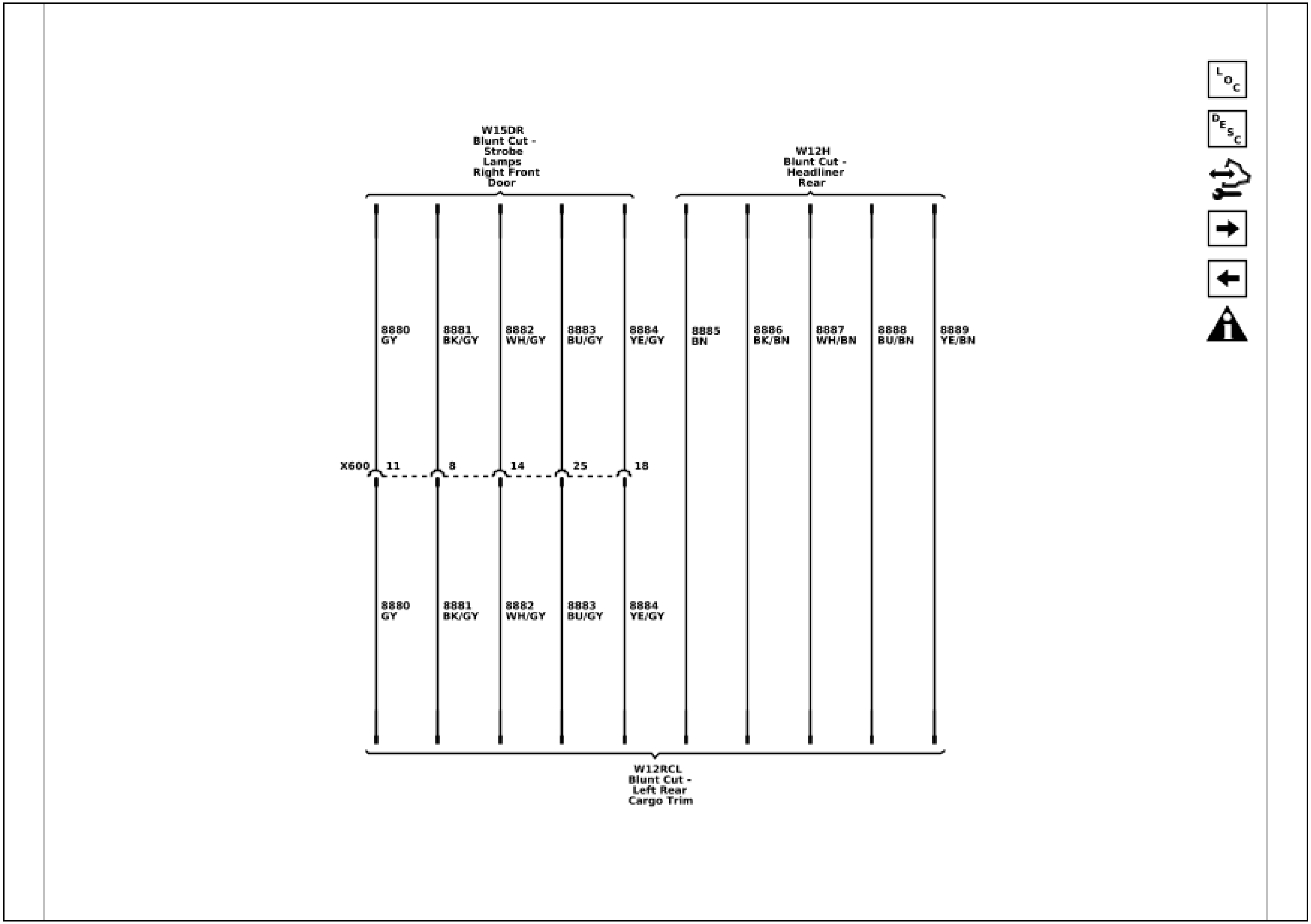
## Upfitter Provision Schematics (Emergency Vehicle Warning Lamps (5W4 / 9C1))


6885689
K219 Lighting Control Module
X4 8
8868 VT/YE
X4 9
8869 VT/GN
X905 7
8869 VT/GN
S194 Emergency Vehicle Warning Rear Lamp Switch
3
1
2050 BK
F30UA
X5 1
8866 VT
27
8866 VT
J902
J903
8866 VT
1
8867 WH
3
2050 BK
2
E9LGL Emergency Vehicle Warning Rear Lamp - Liftgate Left
G409A
8866 VT
1
8867 WH
3
2050 BK
2
E9LGR Emergency Vehicle Warning Rear Lamp - Liftgate Right
2050 BK
8867 WH
X905 28
8867 WH
J336
8867 WH
W12FC Blunt Cut - Front Seat/Center Console
8867 WH
W12RCL Blunt Cut - Left Rear Cargo Trim

## Upfitter Provision Schematics (Outside Rear View Mirror and Rear Window Strobe Provision - Left (5W4 / 9C1))

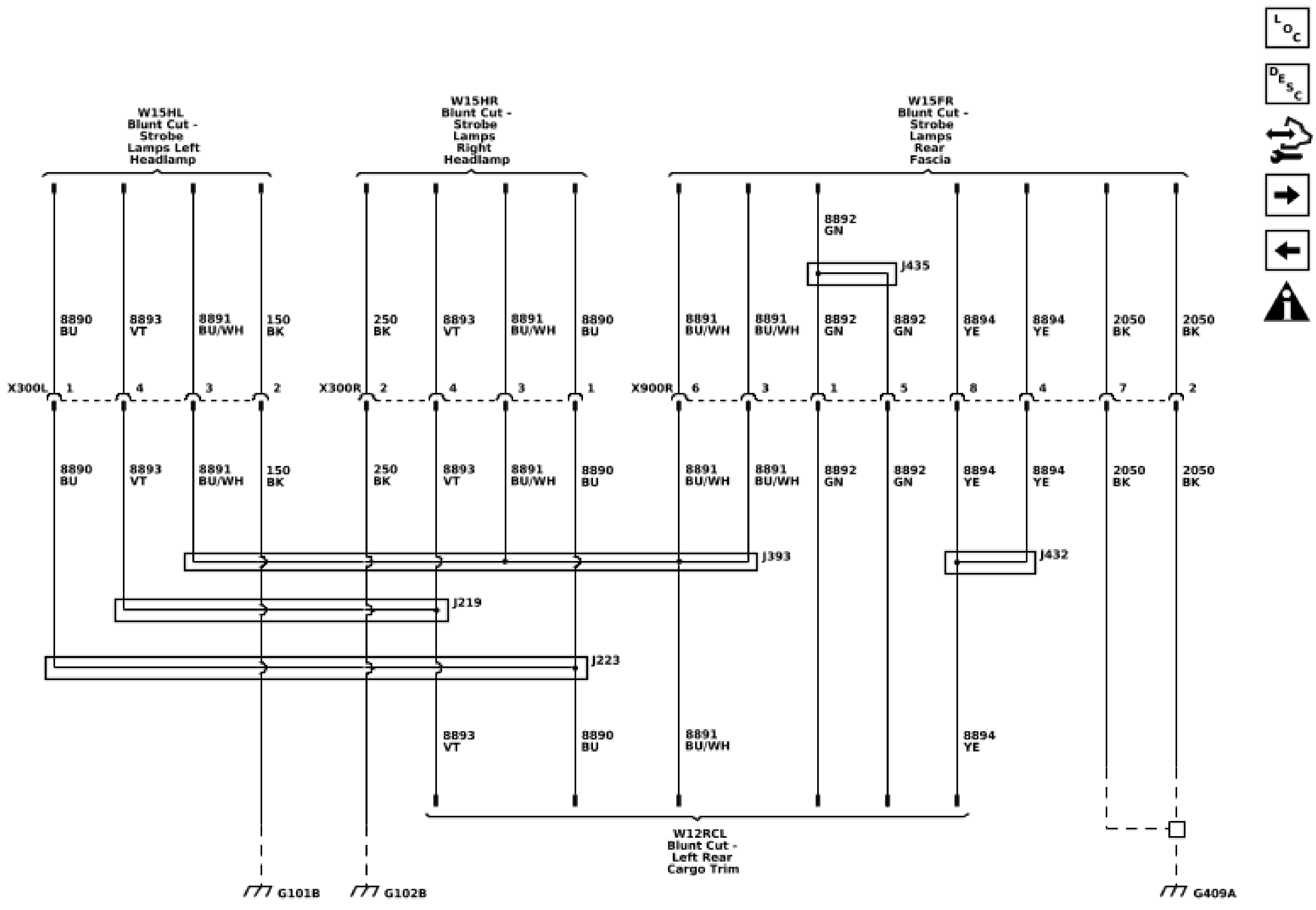

6885690
W12H Blunt Cut - Headliner Rear
8875 GN
8876 BK/GN
8877 WH/GN
8878 BU/GN
8879 YE/GN
W15DL Blunt Cut - Strobe Lamps Left Front Door
8870 VT
8871 BK/VT
8872 WH/VT
8873 BU/VT
8874 YE/VT
X500
8
7
22
1
11
8870 VT
8871 BK/VT
8872 WH/VT
8873 BU/VT
8874 YE/VT
W12RCL Blunt Cut - Left Rear Cargo Trim

# Upfitter Provision Schematics (Outside Rear View Mirror and Rear Window Strobe Provisions - Right (5W4 / 9C1))


W15DR
Blunt Cut -
Strobe
Lamps
Right Front
Door
W12H
Blunt Cut -
Headliner
Rear
8880
GY
8881
BK/GY
8882
WH/GY
8883
BU/GY
8884
YE/GY
8885
BN
8886
BK/BN
8887
WH/BN
8888
BU/BN
8889
YE/BN
X600
11
8
14
25
18
8880
GY
8881
BK/GY
8882
WH/GY
8883
BU/GY
8884
YE/GY
W12RCL
Blunt Cut -
Left Rear
Cargo Trim

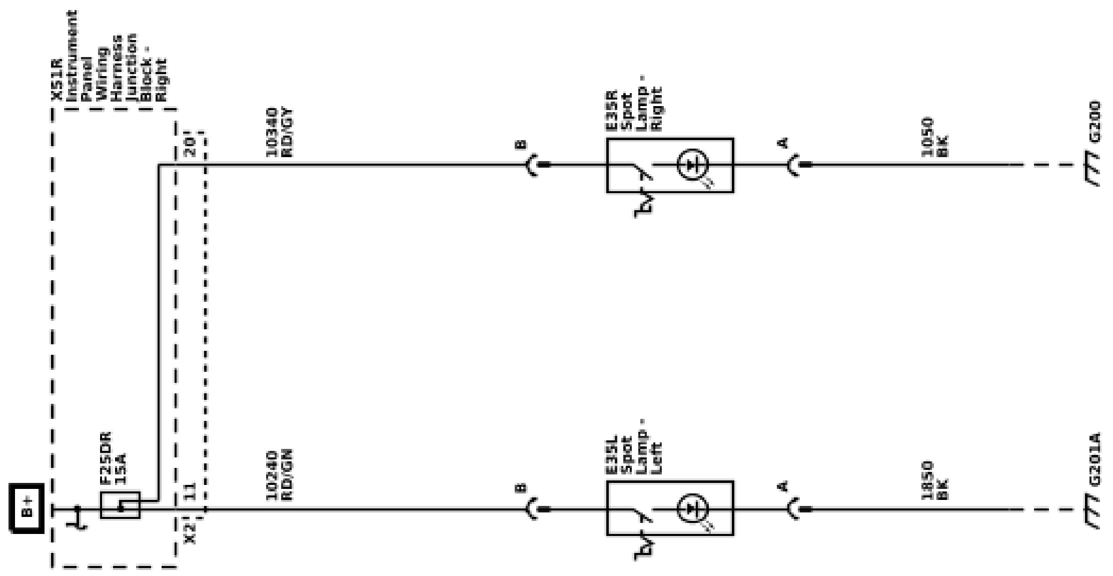
6885691

## Upfitter Provision Schematics (Headlamp and Taillamp LED Strobe System Provisions (5W4 / 9C1))

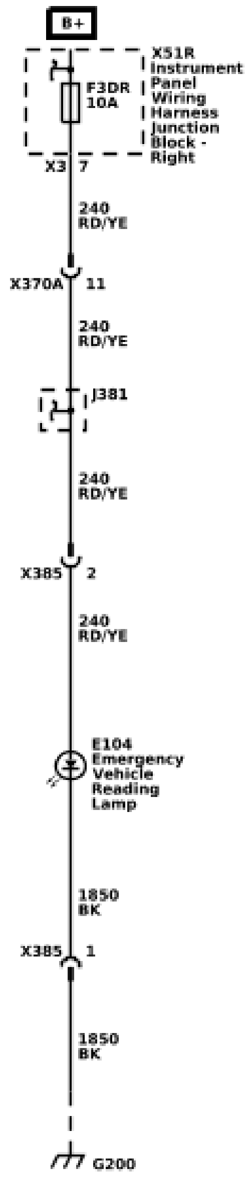

W15HL
Blunt Cut - Strobe Lamps Left Headlamp
W15HR
Blunt Cut - Strobe Lamps Right Headlamp
W15FR
Blunt Cut - Strobe Lamps Rear Fascia
8890 BU
8893 VT
8891 BU/WH
150 BK
250 BK
8893 VT
8891 BU/WH
8890 BU
8891 BU/WH
8891 BU/WH
8892 GN
8892 GN
8892 GN
8894 YE
8894 YE
2050 BK
2050 BK
J435
X300L
1
4
3
2
X300R
2
4
3
1
X900R
6
3
1
5
8
4
7
2
J393
J432
J219
J223
8893 VT
8890 BU
8891 BU/WH
8894 YE
W12RCL
Blunt Cut - Left Rear Cargo Trim
G101B
G102B
G409A

6885692

## Upfitter Provision Schematics (LED Spot Lamps (5W4 / 9C1))


6885693
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F25DR 15A
X2
11
20
10240 RD/GN
10340 RD/GY
B
E35L Spot Lamp - Left
E35R Spot Lamp - Right
A
1850 BK
1050 BK
G201A
G200

## Upfitter Provision Schematics (Emergency Vehicle Reading Lamps (5W4 / 9C1))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
240 RD/YE
X385 2
240 RD/YE
E104 Emergency Vehicle Reading Lamp
1850 BK
X385 1
1850 BK
G200

6885694

# Component Locator

## Master Electrical Component List

### Master Electrical Component List

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| A3L | Sunshade - Left | — | In the passenger compartment, at the front of the headliner, left side | •<br>• | — |
| A3R | Sunshade - Right | — | In the passenger compartment, at the front of the headliner, right side | •<br>• | — |
| A7 | Fuel Tank Fuel Pump Module | — | Under the vehicle, left side, in front of rear axle, mounted in the fuel tank | •<br>• | |
| A9A | Outside Rearview Mirror - Driver | — | Outside the vehicle, at the front of the driver door | | |
| A9B | Outside Rearview Mirror - Passenger | — | Outside the vehicle, at the front of the passenger door | | |
| A10 | Inside Rearview Mirror | DD8 / DRZ | In the passenger compartment, at the top center of the windshield | •<br>• | •<br>• |
| A11 | Radio | — | In the instrument panel, right side, right of the instrument panel compartment | | •<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>•<br>• |
| A16 | Transfer Case Four Wheel Drive Actuator | NP0 / NQH | Under the vehicle, mounted to the rear of the transfer case | | |
| A22 | Radio Control | — | In the passenger compartment, front center, mounted to the center of the Instrument Panel | •<br>• | •<br>• |
| A23C | Liftgate Latch | — | At the rear of the vehicle, within liftgate, at the center of the bottom of the liftgate | | •<br>• |
| A23D | Front Side Door Latch - Driver | — | In the driver door, at the rear center | | |
| A23LR | Rear Side Door Latch - Left | — | In the left rear door, at the rear center | •<br>• | |
| A23P | Front Side Door Latch - Passenger | — | In the passenger door, at the rear center | | |
| A23RR | Rear Side Door Latch - Right | — | In the right rear door, at the rear center | •<br>• | |
| A24D | Front Side Door Outside Handle - Left | — | Outside of the vehicle, at the rear of the driver door | | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| A24LR | Rear Side Door Outside Handle - Left | — | Outside of the vehicle, at the rear of the left rear door | •<br>• | |
| A24P | Front Side Door Outside Handle - Right | — | Outside of the vehicle, at the rear of the passenger door | | |
| A24RR | Rear Side Door Outside Handle - Right | — | Outside of the vehicle, at the rear of the right rear door | •<br>• | |
| A26 | Heater and Air Conditioning User Interface Control - Front | — | In the passenger compartment, at the center of the instrument panel, beneath A22 Radio Control | •<br>• | |
| A34 | Heater and Air Conditioning Auxiliary Control | — | • (-(5W4/9C1/AZ3)) In the passenger compartment, center, at the rear of the floor console<br>• (5W4/9C1) In the luggage compartment, right rear, below D-pillar, behind right quarter lower rear trim panel<br>• (AZ3) In the passenger compartment, center, at the rear of the center seat, above X92CD Dual Charge Only Receptacle - Floor Console Rear | •<br>•<br>•<br>• | •<br>•<br>•<br>•<br>• |
| A38 | Reductant Tank Fluid Supply Pump Module | LZ0 | Under the vehicle, right side, attached to reductant line, near bottom center of reductant tank | | |
| A103 | Roof Console | — | In the passenger compartment, front center, mounted to headliner | •<br>• | |
| A104 | Brake Master Cylinder | — | In the engine compartment, left rear, bolted to the engine compartment bulkhead | — | — |
| B1 | Air Conditioning Refrigerant Pressure Sensor | — | • (L84/L87) In the engine compartment, right side, mounted to high pressure A/C line, rearward of condenser<br>• (LZ0) In the engine compartment, left side of the Engine, I n A/C line under the upper radiator hose | •<br>• | |
| B5LF | Front Wheel Speed Sensor - Left | — | At the left front wheel, mounted to the steering knuckle at front | | |
| B5LR | Rear Wheel Speed Sensor - Left | — | At the left rear wheel, mounted to the suspension knuckle at bottom front | | |
| B5RF | Front Wheel Speed Sensor - Right | — | At the right front wheel, mounted to the steering knuckle at front | | |
| B5RR | Rear Wheel Speed Sensor - Right | — | At the right rear wheel, mounted to the suspension knuckle at bottom front | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B9 | Ambient Air Temperature Sensor | — | At the front of the vehicle, right of center, attached to lower right side of M96A Active Grille Air Shutter Actuator 1 | •<br>• | |
| B10D | Sun Load and Ambient Light and Security Indicator Sensor | — | In the instrument panel, at center top, at center defrost grille | •<br>• | |
| B11LF | Front Suspension 4 Corner Leveling System Position Sensor - Left | F47 | In left front wheel well, mounted to the frame and the front of the left upper control arm | | |
| B11LR | Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Left | F47 | In the left rear wheel well, mounted to the frame and the inside of the left rear trailing arm | •<br>• | |
| B11RF | Front Suspension 4 Corner Leveling System Position Sensor - Right | F47 | In right front wheel well, mounted to the frame and the front of the right upper control arm | | |
| B11RR | Rear Suspension 2 or 4 Corner Air Leveling Position Sensor - Right | F47 | In the right rear wheel well, mounted to the frame and the inside of the right rear trailing arm | •<br>• | |
| B13 | Automatic Transmission Fluid Temperature Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14A | Automatic Transmission Output Speed Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14C | Automatic Transmission Input Speed Sensor | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14DA | Automatic Transmission Intermediate Speed Sensor 1 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B14DB | Automatic Transmission Intermediate Speed Sensor 2 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B20A | Brake Fluid Level Indicator Switch | — | In the engine compartment, left rear, mounted in the brake fluid reservoir | | |
| B22 | Brake Pedal Position Sensor | — | In the passenger compartment, under the left side of the instrument panel, attached to the top of the brake pedal assembly | | |
| B23 | Camshaft Position Sensor | L84 / L87 | In the engine compartment, front center, mounted to timing chain cover, above the left side of the crankshaft harmonic balancer | | |
| B23E | Camshaft Position Sensor - Exhaust | LZ0 | In the engine compartment, rear, mounted to the right rear corner of the cylinder head | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B24 | Mobile Telephone Microphone | — | In passenger compartment, front center, in A103 Roof Console | — | |
| B26 | Crankshaft Position Sensor | — | • (L84/L87) In the engine compartment, right rear, mounted to right rear side of engine block, behind M64 Starter Motor<br>• (LZ0) In the engine compartment, right rear, beneath M64 Starter Motor mounted to the side of the engine block | •<br>• | •<br>• |
| B27LF | Front Side Door Outside Handle Switch - Left | — | Outside of the vehicle, at the rear of the driver door, within A24D Front Side Door Outside Handle - Left | | — |
| B27LR | Rear Side Door Outside Handle Switch - Left | — | Outside of the vehicle, at the rear of the left rear door, within A24LR Rear Side Door Outside Handle - Left Rear | •<br>• | — |
| B27RF | Front Side Door Outside Handle Switch - Right | — | Outside of the vehicle, at the rear of the driver door, within A24P Front Side Door Outside Handle - Right | | — |
| B27RR | Rear Side Door Outside Handle Switch - Right | — | Outside of the vehicle, at the rear of the right rear door, within A24RR Rear Side Door Outside Handle - Right Rear | •<br>• | — |
| B34 | Engine Coolant Temperature Sensor | — | • (L84/L87) In the engine compartment, front center, mounted to water pump<br>• (LZ0) In the engine compartment, right front, mounted to water pump inlet pipe | •<br>• | •<br>• |
| B34B | Engine Coolant Temperature Sensor 2 | LZ0 | In the engine compartment, mounted to the left front side of the engine block, below G13 Generator | | |
| B34K | Charge Air Cooler Coolant Temperature Sensor - Inlet | LZ0 | In the engine compartment, right front, mounted to charge air cooler coolant hose | | |
| B35 | Engine Oil Level Indicator Switch | L84 / L87 | In the engine compartment, mounted to the right side of the engine oil pan | | |
| B36 | Engine Oil Temperature Sensor | LZ0 | In the engine compartment, right rear, mounted to the upper engine oil pan, above the oil filter, forward of B37B Engine Oil Pressure Sensor | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B37B | Engine Oil Pressure Sensor | — | • (L84/L87) In the engine compartment, left rear side of engine, mounted to the engine oil cooler lines, above oil filter<br>• (LZ0) In the engine compartment, right rear, mounted to the upper engine oil pan, above the oil filter, rearward of B36 Engine Oil Temperature Sensor | •<br>• | •<br>• |
| B39 | Air Conditioning Evaporator Air Temperature Sensor | — | Behind the instrument panel, left of center, mounted to the left side of the HVAC assembly, below M37P Programmable Mode Valve Actuator | | |
| B46 | Fuel Level Sensor | — | Under the vehicle, left side, forward of rear axle, inside the fuel tank, part of A7 Fuel Tank Fuel Pump Module | — | — |
| B47 | Fuel Pressure Sensor | — | • (L84/L87) Under the vehicle, left side, in front of rear axle, mounted in line, near the top of A7 Fuel Tank Pump Module<br>• (LZ0) Under the vehicle, left side, forward of R29 Fuel Filter | •<br>•<br>• | |
| B47B | Fuel Rail Pressure Sensor | LZ0 | In the engine compartment, at the top of the engine, mounted to the front of fuel rail | | |
| B52C | Heated Oxygen Sensor - Bank 1 Sensor 1 | L84 / L87 | Under the vehicle, mounted in the bank 1 exhaust, upstream of the catalytic converter | | |
| B52D | Heated Oxygen Sensor - Bank 1 Sensor 2 | L84 / L87 | Under the vehicle, mounted to the bank 1 downstream catalytic converter | | |
| B52E | Heated Oxygen Sensor - Bank 2 Sensor 1 | L84 / L87 | Under the vehicle, mounted in the bank 2 exhaust, upstream of the catalytic converter | | |
| B52F | Heated Oxygen Sensor - Bank 2 Sensor 2 | L84 / L87 | Under the vehicle, mounted to the bank 2 downstream catalytic converter | | |
| B55 | Engine Compartment Cover Switch | — | Behind the front grille, center of hood latch | | |
| B58L | Airbag Front End Discriminating Sensor - Left | — | In the engine compartment, left front, at the bottom of the radiator core support | | |
| B58R | Airbag Front End Discriminating Sensor - Right | — | In the engine compartment, right front, at the bottom of the radiator core support | | |
| B61P | Seat Belt Tension Sensor - Passenger | — | In the passenger compartment, at the base of the B-pillar, part of the passenger seat belt retractor pretensioner | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B63LF | Airbag Side Impact Sensor - Left Front Door | — | At the left front of the passenger compartment, mounted inside the middle of the left front door | | |
| B63LR | Airbag Side Impact Rear Sensor - Left Door | — | At the left rear of the passenger compartment, mounted to body, rearward of base of left rear door | •<br>• | |
| B63RF | Airbag Side Impact Sensor - Right Front Door | — | At the right front of the passenger compartment, mounted inside the middle of the right front door | | |
| B63RR | Airbag Side Impact Rear Sensor - Right Door | — | At the right rear of the passenger compartment, mounted to body, rearward of base of right rear door | •<br>• | |
| B65 | Manifold Absolute Pressure and Intake Air Temperature Sensor | LZ0 | In the engine compartment, left side of engine, mounted to the intake manifold, above the Q18C Fuel Pressure Regulator 3 | | |
| B68A | Knock Sensor 1 | L84 / L87 | In the engine compartment, left side of engine, mounted to the rear of the engine block, below exhaust manifold, behind knock sensor shield | | |
| B68B | Knock Sensor 2 | L84 / L87 | In the engine compartment, right rear, mounted to right rear side of engine block, above M64 Starter | | |
| B70 | Liftgate Close Switch | TB5 / TCP | At the rear of the vehicle, within liftgate, at the center of the bottom of the liftgate, left of A23C Liftgate Latch | | |
| B74 | Manifold Absolute Pressure Sensor | L84 / L87 | In the engine compartment, front center, mounted to intake manifold, to the left of Q38 Throttle Body | | |
| B75 | Mass Airflow Sensor | — | In the engine compartment, left front, mounted to the air cleaner lid | | |
| B87 | Rearview Driver Information Camera | — | At rear of vehicle, mounted to liftgate, above right side of license plate, left of E7R Rear License Plate Lamp - Right | | |
| B88CL | Seat Belt Switch - 3rd Row Left | UH6 | In the passenger compartment, at the left side of left third row seat, part of B153CL 3rd Row Seat Belt Buckle - Left | | |
| B88CM | Seat Belt Switch - 3rd Row Middle | UH6 | In the passenger compartment, at the middle of the third row seat, part of B153CM 3rd Row Seat Belt Buckle - Middle | | |
| B88CR | Seat Belt Switch - 3rd Row Right | UH6 | In the passenger compartment at the right of the third row seat, part of B153CR 3rd Row Seat Belt Buckle - Right | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B88DB | Seat Belt Sensor - Driver | — | In the passenger compartment, at the inboard side of the driver seat, part of B153D Front Seat Belt Buckle - Driver | | |
| B88LR | Seat Belt Switch - Left Rear | UH5 | In the passenger compartment, 2nd row of seats, left side, part of B153LR Rear Seat Belt Buckle - Left | •<br>• | |
| B88MR | Seat Belt Switch - Rear Middle | AT6 / ATT | In the passenger compartment, at the middle of the second row seat, part of B153RM Rear Center Seat Belt Buckle | | |
| B88P | Seat Belt Switch - Passenger | — | In the passenger compartment, at the inboard side of the passenger seat, part of B153P Front Seat Belt Buckle - Passenger | | |
| B88RR | Seat Belt Switch - Right Rear | UH5 | In the passenger compartment, 2nd row of seats, right side, part of B153RR Rear Seat Belt Buckle - Right | •<br>• | |
| B96 | Cylinder Head Temperature Sensor | LZ0 | In the engine compartment, front center, mounted to the front of the cylinder head, above the belt drive | | |
| B107 | Accelerator Pedal Position Sensor | — | In the passenger compartment, in the driver side foot well, under the instrument panel, above the accelerator pedal | | |
| B110 | Battery Monitor Module | — | In the engine compartment, right rear, part of battery negative post clamp | | •<br>• |
| B110AX | Battery Monitor Module - Auxiliary | 5W4 / 9C1 | In the cargo area, left rear, behind trim panel, rear of the left rear wheel house, part of battery negative post clamp at C1B Battery - Auxiliary | — | •<br>• |
| B117A | Windshield Outside Moisture/ Ambient Light and Humidity Sensor | — | In the passenger compartment, at the top center of the windshield, forward of windshield multifunction sensor mount bracket cover insert, | •<br>• | |
| B118 | Windshield Washer Solvent Container Level Sensor | — | In the engine compartment, attached to the outside of the washer fluid reservoir, rearward of G24 Windshield Washer Pump | | |
| B130C | Exhaust Gas Recirculation Temperature Sensor 3 | LZ0 | In the engine compartment, right rear, attached to exhaust gas recirculation cooler | | |
| B136 | Exhaust Particulate Matter Sensor | LZ0 | Under the vehicle, right side, in the exhaust, forward of transmission crossmember, above B195B Nitrogen Oxides Sensor 2 | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B137B | Power Steering Shaft Torque/ Position Sensor | — | Under the vehicle, in the engine compartment, left front, behind the left side of the power steering rack. | — | |
| B139 | Transfer Case Two/Four Wheel Drive Actuator Position Sensor | NP0 / NQH | Under the vehicle, mounted to the left rear of the transfer case | | |
| B150 | Fuel Tank Pressure Sensor | L84 / L87 | Under the vehicle, at the top of the fuel tank, mounted to A7 Fuel Tank Fuel Pump Module | •<br>• | |
| B153CL | 3rd Row Seat Belt Buckle - Left | UH6 | In the passenger compartment, at the left side of third row seat | — | — |
| B153CM | 3rd Row Seat Belt Buckle - Middle | UH6 | In the passenger compartment, at the middle of the third row seat | — | — |
| B153CR | 3rd Row Seat Belt Buckle - Right | UH6 | In the passenger compartment at the right side of the third row seat | — | — |
| B153D | Front Seat Belt Buckle - Driver | — | In the passenger compartment, at the inboard side of the driver seat | — | — |
| B153LR | Rear Seat Belt Buckle - Left | UH5 | In the passenger compartment, 2nd row of seats, left side | — | — |
| B153P | Front Seat Belt Buckle - Passenger | — | In the passenger compartment, at the inboard side of the passenger seat | — | — |
| B153RM | Rear Center Seat Belt Buckle | AT6 / ATT | In the passenger compartment, 2nd row of seats, middle | — | — |
| B153RR | Rear Seat Belt Buckle - Right | UH5 | In the passenger compartment, 2nd row of seats, right side | — | — |
| B159BL | Body Side Rear Window Glass Breakage Sensor - Left | UTU | In the cargo area, left side, attached to the lower portion of the left rear side window | | |
| B159BR | Body Side Rear Window Glass Breakage Sensor - Right | UTU | In the cargo area, right side, attached to the lower portion of the right rear side window | | |
| B161LF | Electronic Suspension Wheel Front Vertical Accelerometer - Left | Z95 | In left front wheel well, mounted to the frame and the front of the left upper control arm | | |
| B161RF | Electronic Suspension Wheel Front Vertical Accelerometer - Right | Z95 | In right front wheel well, mounted to the frame and the rear of the right upper control arm | | |
| B162LR | Electronic Suspension Rear Vertical Accelerometer - Left | Z95 | At the left rear wheel, mounted to the inside of suspension knuckle at bottom | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B162RR | Electronic Suspension Rear Vertical Accelerometer - Right | Z95 | At the right rear wheel, mounted to the inside of suspension knuckle at bottom | | |
| B165 | Content Theft Deterrent Sensor | UTR | In the passenger compartment, front center, mounted to top of A103 Roof Console | — | — |
| B166LFB | Advanced Parking Assist Alarm Side Sensor - Left Front | UKZ | On the front fascia, forward of left front wheel opening | | |
| B166LRB | Advanced Parking Assist Alarm Rear Side Sensor - Left | UKZ | At left side of vehicle at rear, rearward of left rear wheel opening | | |
| B166RFB | Advanced Parking Assist Alarm Side Sensor - Right Front | UKZ | On the front fascia, forward of right front wheel opening | | |
| B166RRB | Advanced Parking Assist Alarm Rear Side Sensor - Right | UKZ | At right side of vehicle at rear, rearward of right rear wheel opening | | |
| B172LF | Front Disc Brake Pad Wear Sensor - Left | JBK | Under the vehicle, at left front caliper, attached to brake pad | | |
| B172LR | Rear Disc Brake Pad Wear Sensor - Left | JBK | Under the vehicle, at left rear caliper, attached to brake pad | | |
| B174G | Front View Driver Information Camera - Grille | — | At the front of the vehicle, front center, attached to the back of the grille | | |
| B174W | Front View Camera - Windshield | UGN / UHY | In the passenger compartment, at the top center of the windshield, forward of windshield multifunction sensor mount bracket cover insert | •<br>• | •<br>• |
| B193A | Charge Air Cooler Air Temperature Sensor - Inlet | LZ0 | In the engine compartment, mounted to the left side of the air charge cooler | | |
| B193B | Charge Air Cooler Air Temperature Sensor - Outlet | LZ0 | In the engine compartment, mounted to the front of the air charge cooler | | |
| B194 | Reductant Pressure Sensor | LZ0 | Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| B195A | Nitrogen Oxides Sensor 1 | LZ0 | In the engine compartment, , on the top center of the engine | | |
| B195B | Nitrogen Oxides Sensor 2 | LZ0 | Under the vehicle, right side, in the exhaust, forward of transmission crossmember | | |
| B195C | Nitrogen Oxides Sensor 3 | LZ0 | Under the vehicle, right side, in the exhaust, rearward of transmission crossmember | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B203 | Radiator Coolant Temperature Sensor | LZ0 | In the engine compartment, right front, attached to the right side of the radiator | | |
| B212 | Reductant Tank Fluid Sensor | LZ0 | Under the vehicle, right side, attached to reductant line, near rear bottom of reductant tank | | |
| B214 | Reductant Tank Temperature Sensor | LZ0 | Under the vehicle, right side, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| B225L | Side View Driver Information Camera - Left | — | Outside of vehicle, left side, within A9A Outside Rearview Mirror - Driver | | — |
| B225R | Side View Driver Information Camera - Right | — | Outside of vehicle, right side, within A9B Outside Rearview Mirror - Passenger | | — |
| B233B | Forward Range Radar Sensor - Long Range | UGN | At the front of the vehicle, behind front fascia, at center | | |
| B233LF | Short Range Radar Sensor - Left Front | UKL | In the front of vehicle, mounted inside front fascia, left side | | |
| B233LR | Short Range Radar Rear Sensor - Left | UKI / UKZ | In the rear of vehicle, mounted inside rear fascia, left side, right of B306EB Rear Parking Assist Alarm Outer Sensor - Left | | |
| B233RF | Short Range Radar Sensor - Right Front | UKL | In the rear of vehicle, mounted inside rear fascia, left side | | |
| B233RR | Short Range Radar Rear Sensor - Right | UKI / UKZ | In the rear of vehicle, mounted inside rear fascia, right side, right of B306GB Rear Parking Assist Alarm Sensor - Right Middle | | |
| B233SL | Short Range Radar Rear Side Sensor - Left | UKL | At the rear of vehicle, mounted to inside of rear fascia, left side | | |
| B233SR | Short Range Radar Rear Side Sensor - Right | UKL | At the rear of vehicle, mounted to inside of rear fascia, right side | | |
| B284 | Vehicle Dynamics Sensor | UKL | In the passenger compartment, bolted to the floor between the front seats or under console if equipped, left of K36 Restraints Control Module | | |
| B292 | Driver Monitoring Camera | UKL | In the passenger compartment, mounted to top of upper steering column trim. | •<br>• | |
| B306AB | Front Parking Assist Alarm Outer Sensor - Left | UKZ | At the front of the vehicle, left side, mounted in the front fascia | | |
| B306BB | Front Parking Assist Alarm Sensor - Left Middle | UKZ | At the front of the vehicle, left of center, mounted in the front fascia | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B306CB | Front Parking Assist Alarm Sensor - Right Middle | UKZ | At the front of the vehicle, right of center, mounted in the front fascia | | |
| B306DB | Front Parking Assist Alarm Outer Sensor - Right | UKZ | At the front of the vehicle, right side, mounted in the front fascia | | |
| B306EB | Rear Parking Assist Alarm Outer Sensor - Left | — | On the rear fascia, near the left rear corner | | |
| B306FB | Rear Parking Assist Alarm Sensor - Left Middle | — | On the rear fascia, near the left rear middle | | |
| B306GB | Rear Parking Assist Alarm Sensor - Right Middle | — | On the rear fascia, near the right rear middle | | |
| B306HB | Rear Parking Assist Alarm Outer Sensor - Right | — | On the rear fascia, near the right rear corner | | |
| B307 | Steering Wheel Touch Sensor | UKL | In the passenger compartment, left front, internal to the steering wheel | | — |
| B310 | Fuel Pressure and Temperature Sensor | L84 / L87 | In the engine compartment, at the top of the engine, mounted to the fuel rail | — | |
| B315A | Transmission Range Control Valve 1 Position Switch | — | Under the vehicle, within T12 Automatic Transmission | — | |
| B316 | Transmission Park Valve Position Switch | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| B321 | Crankcase Pressure Sensor | LZ0 | In the engine compartment, rear center, mounted to the right rear side of the valve cover | | |
| B342A | UHF Low Energy Remote Control Access Sensor Transceiver 1 | BOR / BOY | At right front of vehicle, mounted to backside of front fascia, forward of wheel well opening | | |
| B342B | UHF Low Energy Remote Control Access Sensor Transceiver 2 | BOR / BOY | On the rear fascia, far right side, rearward of right rear wheel opening | | |
| B342C | UHF Low Energy Remote Control Access Sensor Transceiver 3 | BOR / BOY | At left front of vehicle, mounted to backside of front fascia, forward of wheel well opening, | | |
| B342D | UHF Low Energy Remote Control Access Sensor Transceiver 4 | BOR / BOY | On the rear fascia, far left side, rearward of left rear wheel opening | | |
| B342E | UHF Low Energy Remote Control Access Sensor Transceiver 5 | BOR / BOY | In the cargo area, above headliner, near center | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| B345P | Exhaust Pressure Differential Sensor - Particulate Filter | LZ0 | In the engine compartment, right rear, mounted to the exhaust pressure differential sensor bracket at the right rear of the engine, left of B345R Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation | | |
| B345R | Exhaust Pressure Differential Sensor - Exhaust Gas Recirculation | LZ0 | In the engine compartment, right rear, mounted to the exhaust pressure differential sensor bracket at the right rear of the engine, right of B345P Exhaust Pressure Differential Sensor - Particulate Filter | | |
| B352 | Video Display Inside Rearview Mirror Camera | DRZ | At rear of vehicle, mounted to liftgate, above left side of license plate, left of B87 Rearview Driver Information Camera | | |
| B355HLF | Communication Interface Module Headliner Microphone - Left Front | — | In the passenger compartment, at the front of the headliner, left side, rearward of A3L Sunshade - Left | •<br>• | |
| B355HRF | Communication Interface Module Headliner Microphone - Right Front | — | In the passenger compartment, at the front of the headliner, right side, rearward of A3R Sunshade - Right | •<br>• | |
| B359 | Exhaust Gas Temperature Sensor Module | LZ0 | In the engine compartment, right rear, mounted to exhaust, just above the Q61B Reductant Fluid Injector 2 | | |
| B359B | Exhaust Gas Temperature Sensor Module 2 | LZ0 | In the engine compartment, right rear, mounted to the exhaust pressure differential sensor bracket at the right rear of the engine, above the B345P Exhaust Pressure Differential Sensor - Particulate Filter | | |
| C1 | Battery | — | In the engine compartment, right rear | | — |
| C1B | Battery - Auxiliary | 5W4 / 9C1 | In the cargo area, left rear, behind trim panel, rear of the left rear wheel house | | — |
| E2LF | Front Side Marker Lamp - Left | — | At the left front of vehicle, forward of left front wheel and tire, mounted to fender | | |
| E2RF | Front Side Marker Lamp - Right | — | At the right front of vehicle, forward of right front wheel and tire, mounted to fender | | |
| E4Y | Outside Rearview Mirror Turn Signal Lamp - Left | DW6 / DXR | At the front of the left front door, part of the A9A Outside Rearview Mirror - Driver | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E4Z | Outside Rearview Mirror Turn Signal Lamp - Right | DW6 / DXR | At the front of the right front door, part of the A9B Outside Rearview Mirror - Passenger | | — |
| E6 | High Mount Stop Lamp | — | Outside the vehicle, at the top of the liftgate, above rear glass | | |
| E7L | Rear License Plate Lamp - Left | — | At rear of vehicle, mounted to liftgate, above left side of license plate | | |
| E7R | Rear License Plate Lamp - Right | — | At rear of vehicle, mounted to liftgate, above right side of license plate | | |
| E8A | Front Side Door Sill Plate Illumination Lamp - Left | S0M | In the passenger compartment, left front, in driver door sill trim plate | — | |
| E8B | Front Side Door Sill Plate Illumination Lamp - Right | S0M | In the passenger compartment, right front, in passenger door sill trim plate | — | |
| E8Q | Rear Side Door Sill Plate Illumination Lamp - Left | S0M | In the passenger compartment, left rear, in left rear door sill trim plate | — | |
| E8R | Rear Side Door Sill Plate Illumination Lamp - Right | S0M | In the passenger compartment, right rear, in right rear door sill trim plate | — | |
| E8SR | Cargo Center Courtesy Lamp | — | In the cargo area, rear center, mounted to headliner | •<br>• | |
| E8VA | Front Floor Courtesy Lamp - Left | — | In the passenger compartment, left front, attached to instrument panel left lower insulator | | |
| E8VB | Rear Floor Courtesy Lamp - Left | — | In the passenger compartment, left side, attached to bracket at bottom rear of driver seat | | |
| E8VC | Front Floor Courtesy Lamp - Right | — | In the passenger compartment, right front, attached to instrument panel right lower insulator | | |
| E8VD | Rear Floor Courtesy Lamp - Right | — | In the passenger compartment, right side, attached to bracket at bottom rear of passenger seat | | |
| E8ZL | Assist Step Lamp - Left | B3L | Under the vehicle, along the left frame rail, under the driver door part of the power assist step | — | |
| E8ZR | Assist Step Lamp - Right | B3L | Under the vehicle, along the right frame rail, under the passenger door part of the power assist step | — | |
| E9LGL | Emergency Vehicle Warning Rear Lamp - Liftgate Left | 5W4 / 9C1 | At the rear of the vehicle, left, within liftgate | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E9LGR | Emergency Vehicle Warning Rear Lamp - Liftgate Right | 5W4 / 9C1 | At the rear of the vehicle, right, within liftgate | — | |
| E12A | Glow Plug 1 | LZ0 | In the engine compartment, In the left side of cylinder head at cylinder 1 | | |
| E12B | Glow Plug 2 | LZ0 | In the engine compartment, In the left side of cylinder head at cylinder 2 | | |
| E12C | Glow Plug 3 | LZ0 | In the engine compartment, In the left side of cylinder head at cylinder 3 | | |
| E12D | Glow Plug 4 | LZ0 | In the engine compartment, In the left side of cylinder head at cylinder 4 | | |
| E12E | Glow Plug 5 | LZ0 | In the engine compartment, In the left side of cylinder head at cylinder 5 | | |
| E12F | Glow Plug 6 | LZ0 | In the engine compartment, In the left side of cylinder head at cylinder 6 | | |
| E13LA | Front Headlamp - Left | — | Outside the vehicle, at the left front corner | | |
| E13RA | Front Headlamp - Right | — | Outside the vehicle, at the right front corner | | |
| E14A | Front Seat Back Heater - Driver | KA1 | In the passenger compartment, in the driver seat back | | |
| E14B | Front Seat Cushion Heater - Driver | KA1 | In the passenger compartment, in the driver seat cushion | | |
| E14C | Front Seat Back Heater - Passenger | KA1 | In the passenger compartment, in the passenger seat back | | |
| E14D | Front Seat Cushion Heater - Passenger | KA1 | In the passenger compartment, in the passenger seat cushion | | |
| E14F | Rear Seat Cushion Heater - Left Rear | KA6 | In the passenger compartment, in the left rear seat cushion | •<br>• | |
| E14H | Rear Seat Cushion Heater - Right Rear | KA6 | In the passenger compartment, in the right rear seat cushion | •<br>• | |
| E15 | Steering Wheel Heater | KI3 | In the passenger compartment, left front, part of the steering wheel | | — |
| E17D | Outside Rearview Mirror Glass - Driver | — | Outside the vehicle, at the front of the driver door, part of A9A Outside Rearview Mirror - Driver | | — |
| E17P | Outside Rearview Mirror Glass - Passenger | — | Outside the vehicle, at the front of the passenger door, part of A9B Outside Rearview Mirror - Passenger | | — |
| E18 | Rear Window Defogger Grid | — | At the rear of the passenger compartment, part of the liftgate glass | | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E28 | Front Floor Console Compartment Lamp | D07 / DCH | In the passenger compartment, between the front seats, inside the floor console storage bin | •<br>• | •<br>• |
| E29LF | Front Fog Lamp - Left | T40 | Outside the vehicle, at the left front corner, in the front fascia, below E13LA Front Headlamp - Left | | |
| E29RF | Front Fog Lamp - Right | T40 | Outside the vehicle, at the right front corner, in the front fascia, below E13RA Front Headlamp - Right | | |
| E31L | Sunshade Mirror Lamp - Left | — | In the passenger compartment, at the left front of the headliner, part of A3L Sunshade - Left | — | |
| E31R | Sunshade Mirror Lamp - Right | — | In the passenger compartment, at the right front of the headliner, part of A3R Sunshade - Right | — | |
| E35L | Spot Lamp - Left | 5W4 / 9C1 | Outside of the vehicle, left front, mounted to driver A-pillar | — | |
| E35R | Spot Lamp - Right | 5W4 / 9C1 | Outside of the vehicle, right front, mounted to passenger A-pillar | — | |
| E37H | Roof Rail Rear Seat Position Reading and Courtesy Lamp - Left | C3U | In the passenger compartment, above left rear door, mounted to headliner | | |
| E37J | Roof Rail Rear Seat Position Reading and Courtesy Lamp - Right | C3U | In the passenger compartment, above right rear door, mounted to headliner | | |
| E37SMA | Rear Seat Position Center Reading and Courtesy Lamp - 2nd Row | - C3U | In the passenger compartment, rear center, above the 2nd row seats, mounted to headliner | | |
| E37SMB | Rear Seat Position Center Reading and Courtesy Lamp - 3rd Row | — | In the passenger compartment, rear center, above the 3rd row seats, mounted to headliner | •<br>• | |
| E40 | Air Heater | C3A | Behind the instrument panel, left of center, mounted to the left side of the HVAC assembly, rearward of B39 Air Conditioning Evaporator Air Temperature Sensor | | •<br>• |
| E42L | Rear Body Structure Stop Lamp - Left | — | Outside the vehicle, at the left rear corner of the vehicle | | |
| E42R | Rear Body Structure Stop Lamp - Right | — | Outside the vehicle, at the right rear corner of the vehicle | | |
| E52 | Reductant Heater 2 - Injector Supply Pipe | LZ0 | Under the vehicle, right side, attached to reductant line, near bottom center of reductant tank | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| E53A | Reductant Heater 1 - Tank | LZ0 | Under the vehicle, right side, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| E53C | Reductant Heater 3 - Tank | LZ0 | Under the vehicle, right side, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| E55LF | Front Side Door Map Pocket Illumination Lamp - Left | — | Mounted to the driver door trim panel, above the driver door map pocket | | |
| E55LR | Rear Side Door Pocket Illumination Lamp - Left | — | In the passenger compartment, rear of center, left side, in the left rear door trim, inside the arm rest | | |
| E55RF | Front Side Door Map Pocket Illumination Lamp - Right | — | Mounted to the passenger door trim panel, above the passenger door map pocket | | |
| E55RR | Rear Side Door Pocket Illumination Lamp - Right | — | In the passenger compartment, rear of center, right side, in the right rear door trim, inside the arm rest | | |
| E63D | Front Side Door Inside Handle Illumination Lamp - Left | — | Mounted to the driver door trim panel, above the driver door handle | | |
| E63LR | Rear Side Door Inside Handle Illumination Lamp - Left | — | Mounted to the left rear door trim panel, above the left rear door handle | | |
| E63P | Front Side Door Inside Handle Illumination Lamp - Right | — | Mounted to the passenger door trim panel, above the passenger door handle | | |
| E63RR | Rear Side Door Inside Handle Illumination Lamp - Right | — | Mounted to the right rear door trim panel, above the right rear door handle | | |
| E90D | Exterior Flood Lamp - Driver Outside Rearview Mirror | DW6 / DXR | Outside of vehicle, left side, mounted to the bottom of A9A Outside Rearview Mirror - Driver | | — |
| E90P | Exterior Flood Lamp - Passenger Outside Rearview Mirror | DW6 / DXR | Outside of vehicle, right side, mounted to the bottom of A9B Outside Rearview Mirror - Passenger | | — |
| E104 | Emergency Vehicle Reading Lamp | 5W4 / 9C1 | In the passenger compartment, rear of A103 Roof Console, mounted to the headliner | — | — |
| F101 | Instrument Panel Airbag | — | In the instrument panel, passenger side, mounted to backside of instrument panel carrier | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| F105LA | Front and Rear and 3rd Row Roof Rail Airbag - Left | — | In the passenger compartment, on the left side, above the door openings, under the headliner | •<br>• | |
| F105RA | Front and Rear and 3rd Row Roof Rail Airbag - Right | — | In the passenger compartment, on the right side, above the door openings, under the headliner | •<br>• | |
| F106D | Front Seat Outboard Seat Back Airbag - Driver | — | In the driver seat back, mounted to outboard side of frame behind trim | | |
| F106DA | Front Seat Inboard Seat Back Airbag - Driver | ASD | In the driver seat back, mounted to inboard side of frame behind trim | | |
| F106P | Front Seat Outboard Seat Back Airbag - Passenger | — | In the passenger seat back, mounted to outboard side of frame behind trim | | |
| F107 | Steering Wheel Airbag | — | In the passenger compartment, mounted to the middle of the steering wheel | | |
| F112D | Front Seat Belt Retractor - Driver | — | In the passenger compartment, at the base of the driver side B-pillar | | |
| F112P | Front Seat Belt Retractor - Passenger | — | In the passenger compartment, at the base of the passenger side B-pillar | | |
| F113D | Front Seat Belt Anchor Plate Tensioner - Driver | — | In the passenger compartment, mounted left of the outboard driver seat track | | |
| F113P | Front Seat Belt Anchor Plate Tensioner - Passenger | — | In the passenger compartment, mounted right of the outboard passenger seat track | | |
| G1 | Air Conditioning Compressor | — | • (L84/L87) In the engine compartment, right front, mounted to the right lower side of the engine<br>• (LZ0) In the engine compartment, left front, mounted to the left lower side of the engine | | — |
| G4 | Automatic Level Control Air Compressor | F47 | Under the vehicle, left rear, mounted to the inboard side of the driver side frame rail | •<br>• | |
| G5 | Automatic Transmission Auxiliary Fluid Pump | — | Under the vehicle, within T12 Automatic Transmission | — | |
| G10L | Cooling Fan Motor - Left | — | In the engine compartment, in the radiator shroud, left side | •<br>• | |
| G10LW | Cooling Fan Motor - Lower | LZ0 | In the engine compartment, in the radiator shroud, beneath the left and right cooling fan motors | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| G10R | Cooling Fan Motor - Right | — | In the engine compartment, in the radiator shroud, right side | •<br>• | •<br>• |
| G12 | Fuel Pump | — | Under the vehicle, within the fuel tank, part of A7 Fuel Tank Fuel Pump Module | — | — |
| G13 | Generator | — | • (L84/L87) In the engine compartment, right front, mounted to the right upper side of the engine<br>• (LZ0) In the engine compartment, left front, mounted to the left side of the engine | •<br>• | •<br>•<br>• |
| G17 | Heater Coolant Pump | — | In the engine compartment, front center, mounted to the right front of the engine, just above the oil pan | | |
| G18 | Fuel Pump - High Pressure | — | • (L84/L87) In the engine compartment, rear center, at the rear of the intake manifold<br>• (LZ0) In the engine compartment, left rear, mounted near the left side of the transmission bell-housing | | |
| G24 | Windshield Washer Pump | — | In the engine compartment, attached to the outside of the washer fluid reservoir, behind E13LA Front Headlamp - Left | | |
| G31D | Front Seat Back Lumbar Pump - Driver | AVK | In the passenger compartment, inside driver seat back, lower right side | | |
| G31P | Front Seat Back Lumbar Pump - Passenger | AVU | In the passenger compartment, inside passenger seat back, lower right side | | |
| G33 | Reductant Pump | LZ0 | Under the vehicle, right side, forward of rear axle, within reductant tank, part of A38 Reductant Tank Fluid Supply Pump Module | — | — |
| K4 | Running Board Control Module | B3L | Underneath the vehicle, below the passenger side b-pillar, mounted to the outside of the right frame rail | •<br>• | •<br>•<br>• |
| K5 | Automatic Level Control Module | F47 | Under the vehicle, left rear, mounted to the inboard side of the driver side frame rail, rear of frame crossmember | •<br>• | |
| K8AB | Blower Motor Control Module - Rear | — | In the luggage compartment, right side, behind right quarter lower rear trim panel | •<br>• | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K9 | Body Control Module | — | In the passenger compartment, behind the driver side of the instrument panel, outboard of the steering column, left of K219 Lighting Control Module | •<br>• | •<br>•<br>•<br>•<br>•<br>•<br>•<br>• |
| K19 | Suspension Control Module | Z95 | Under the vehicle, mounted to the top of bracket above the right side of spare tire carrier | •<br>• | |
| K20 | Engine Control Module | — | In the engine compartment, left front, behind E13LA Front Headlamp - Left | | •<br>•<br>•<br>•<br>• |
| K29FV | Front Seat Heater Vent Control Module | KA1 | In the passenger compartment, right front, under the passenger seat cushion, front left | | •<br>• |
| K29R | Rear Seat Heater Control Module | KA6 | In the passenger compartment, rear center, underneath the front of the right rear seat cushion | •<br>• | •<br>• |
| K32 | Heated Steering Wheel Module | KI3 - UKL | In the steering wheel, behind the F107 Steering Wheel Airbag | | •<br>• |
| K36 | Restraints Control Module | — | In the passenger compartment, bolted to the floor between the front seats or under console if equipped | | •<br>• |
| K38 | Chassis Control Module | G96 | In the luggage compartment, left rear, mounted above center of wheelhouse, below the rear window, behind Quarter Lower Rear Trim Panel | •<br>• | |
| K40D | Driver Seat Adjuster Memory Module | A45 / AUN | In the passenger compartment, under the driver seat, front right side | | •<br>•<br>• |
| K43 | Power Steering Control Module | — | Under the vehicle, part of the steering gear assembly | — | •<br>•<br>• |
| K56 | Serial Data Gateway Module | — | In the passenger compartment, left front, between the instrument panel and bulkhead, right of steering column, right of K73 Telematic Control Module | | •<br>•<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K56U | Special Purpose Vehicle Control Module | KGU | In the passenger compartment, left front, between the instrument panel and bulkhead, right of steering column | — | |
| K60 | Column Lock Module | — | In the passenger compartment, left front, mounted on top of the steering column, underneath instrument panel | | |
| K61 | Sunroof Control Module | C3U | In the passenger compartment, above headliner, at the rear of the sunroof, left of M81 Sunroof Sunshade Motor | | |
| K67 | Trailer Brake Control Module | JL1 | Under the rear of the vehicle, right side, mounted below tray, above right side of spare tire carrier | •<br>• | |
| K68 | Trailer Lamp Control Module | UET | Under the rear of the vehicle, right side, mounted to inboard side of frame rail | •<br>• | |
| K69 | Transfer Case Control Module | NP0 / NQH | In the engine compartment, left rear, left of K160 Brake System Control Module | | •<br>• |
| K71 | Transmission Control Module | — | In the engine compartment, left side, forward of front wheelhouse liner, forward of K20 Engine Control Module | | |
| K73 | Telematic Control Module | — | In the passenger compartment, left front, between the instrument panel and bulkhead, right of steering column, left of K56 Serial Data Gateway Module | | •<br>•<br>•<br>•<br>• |
| K77 | Remote Function Actuator Module | — | In the passenger compartment, attached to the left rear c-pillar, behind the body lock pillar upper trim panel | •<br>• | |
| K85P | Restraints Occupant Classification System Module - Passenger | — | In the passenger compartment, right front, under the passenger seat cushion | | |
| K99 | Steering Column Control Module | N38 | In the instrument panel, driver side, mounted to the steering column, left side, forward of M65 Steering Column Telescope Actuator | | •<br>• |
| K104DP | Front Seat Bladder Control Module - Driver Primary | AVK | In the passenger compartment, left front, in driver seat back near bottom | | |
| K104P | Front Seat Bladder Control Module - Passenger | AVU | In the passenger compartment, right front, in passenger seat back near bottom | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K111 | Fuel Pump Power Control Module | — | Under the vehicle, left rear, mounted to the outboard side of the left frame rail, forward of left rear trailing arm | •<br>• | |
| K115 | Reductant Control Module | LZ0 | Under the vehicle, right side, mounted to the front of the reductant tank | | |
| K124 | Image Processing Module | UKL | In the luggage compartment, right rear, below D-pillar, behind right quarter lower rear trim panel, right of liftgate opening near center, below T1 DC/AC Converter Control Module | •<br>• | •<br>•<br>•<br>•<br>•<br>• |
| K124AA | Image Processing Module 1 - Processor 1 | UKL | In the luggage compartment, right rear, below D-pillar, behind right quarter lower rear trim panel, right of liftgate opening near center, internal to K124 Image Processing Module | — | — |
| K124AB | Image Processing Module 1 - Processor 2 | UKL | In the luggage compartment, right rear, below D-pillar, behind right quarter lower rear trim panel, right of liftgate opening near center, internal to K124 Image Processing Module | — | — |
| K160 | Brake System Control Module | — | In the engine compartment, left rear corner, near brake master cylinder | | |
| K164 | Differential Control Module | G96 | In the luggage compartment, left rear, mounted at front of wheelhouse, below the rear window, behind Quarter Lower Rear Trim Panel | •<br>• | •<br>• |
| K169 | Folding 3rd Row Seat Module | AS8 | In the passenger compartment, below the 3rd row seat, left side rear | | •<br>• |
| K175 | Front Floor Console Compartment Cooler | DCK | In the passenger compartment, center, inside center console at the floor | | |
| K180S | Driver Monitoring System Module - Steering Wheel | UKL | In the steering wheel, behind the F107 Steering Wheel Airbag | | •<br>•<br>•<br>•<br>•<br>•<br>•<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K182 | Parking Assist Control Module | — | • (- (5W4 / 9C1)) In the luggage compartment, right rear, below D-pillar, behind right quarter lower rear trim panel, rearward of wheelhouse<br>• (5W4 / 9C1) In the luggage compartment, right rear, behind right quarter lower rear trim panel, right of liftgate opening near center, behind A34 Heater and Air Conditioning Auxiliary Control | •<br>• | •<br>•<br>• |
| K183 | UHF Short Range Low Energy Remote Control Access Transceiver | BOR / BOY | • (-AZ3) Below the floor console, mounted front side of rear storage compartment<br>• (AZ3) Below rear of center seat, mounted to right side | •<br>•<br>•<br>• | •<br>• |
| K194 | Rear Gate Module | TB5 / TCP | In the rear compartment, left side , behind the trim, above X53A Body Wiring Harness Junction Block - Rear | •<br>• | •<br>•<br>•<br>• |
| K212 | Gear Shift Control Module | — | In the steering column, right side stalk, internal to S3B Automatic Transmission Electronic Control | — | — |
| K214 | Trailer Tire Pressure Indicator Module | UET | At the rear of the vehicle, mounted to the center of the rear fascia, right of T10G Low Frequency Rear Bumper Antenna | | |
| K219 | Lighting Control Module | — | In the passenger compartment, behind the driver side of the instrument panel, outboard of the steering column, right of K9 Body Control Module | | •<br>•<br>•<br>•<br>• |
| K221L | Headlamp LED Driver Module - Left | — | At the left front of vehicle, mounted to the bottom of E13LA Front Headlamp - Left | — | — |
| K221R | Headlamp LED Driver Module - Right | — | At the right front of vehicle, mounted to the bottom of E13RA Front Headlamp - Right | — | — |
| K230 | Front Floor Console Control Module | DCH | In the passenger compartment, center, beneath the floor console | | |
| K299R | Audio/Video Interface Rear Module | UW9 | In the luggage compartment, right rear, mounted at rear of wheelhouse, below the rear window, behind Quarter Lower Rear Trim Panel | •<br>• | •<br>•<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| K313 | Interior Object Detection Module | RS0 / RSM | In the passenger compartment, attached to the left rear c-pillar, behind the body lock pillar upper trim panel, rearward of K77 Remote Function Actuator Module | •<br>• | |
| M4P | Programmable Air Inlet Valve Actuator | — | Behind the instrument panel, right side, mounted to the top right side of the HVAC assembly | | |
| M6BP | Rear Programmable Temperature Valve Actuator | — | In the cargo area, right side, behind right quarter lower rear trim panel, mounted to the auxiliary HVAC assembly, rear of the M37BP Rear Programmable Mode Valve Actuator | •<br>• | |
| M6PL | Programmable Temperature Valve Actuator - Left | — | Behind the instrument panel, left of center, mounted to the left side of the HVAC assembly, below B39 Air Conditioning Evaporator Air Temperature Sensor | | |
| M6PR | Programmable Temperature Valve Actuator - Right | — | Behind the instrument panel, right of center, mounted to the right side of the HVAC assembly at front middle | | |
| M8 | Blower Motor | — | Behind the instrument panel, right side, mounted to bottom right side of HVAC assembly | | |
| M8B | Blower Motor - Rear | — | In the cargo area, right side, behind right quarter lower rear trim panel, mounted to the auxiliary HVAC unit | •<br>• | |
| M10 | Charge Air Cooler Coolant Pump | LZ0 | In the engine compartment, left front, attached to bracket near base of radiator | | |
| M26 | Front Drive Axle Actuator | NP0 / NQH | Under the front of the vehicle, mounted to the front axle | — | |
| M31L | Liftgate Power Assist Actuator - Left | TB5 / TCP | In the cargo area, left rear, between left side of liftgate and body, behind the left quarter lower rear trim panel | | |
| M33 | Liftgate Window Latch | — | At the rear of the vehicle, within the liftgate, centered at the bottom of the rear window, | | |
| M37BP | Rear Programmable Mode Valve Actuator | — | In the cargo area, right side, behind right quarter lower rear trim panel, mounted to the auxiliary HVAC unit, forward of the M6BP Rear Programmable Temperature Valve Actuator | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| M37P | Programmable Mode Valve Actuator | — | Behind the instrument panel, left of center, mounted to the left side of the HVAC assembly, above B39 Air Conditioning Evaporator Air Temperature Sensor | | |
| M38 | Power Steering Assist Motor | — | Under the vehicle, part of the steering gear assembly | — | — |
| M45 | Rear Window Wiper Motor | — | At rear of vehicle, at the top of liftgate, right of center | | |
| M50D | Front Seat Tilt Adjuster Actuator - Driver | — | In the passenger compartment, under the driver seat, front left side | | |
| M50P | Front Seat Tilt Adjuster Actuator - Passenger | A7K | In the passenger compartment, under the passenger seat, front right side | | |
| M51D | Front Seat Adjuster Actuator - Driver | — | In the passenger compartment, under the driver seat, near right center at inner track | | |
| M51P | Front Seat Adjuster Actuator - Passenger | — | In the passenger compartment, under the passenger seat, near right center at inner track | | |
| M53D | Front Seat Back Lumbar Motor - Driver | AL9 | In the passenger compartment, in driver seat back, lower right side | | |
| M53P | Front Seat Back Lumbar Motor - Passenger | AT9 | In the passenger compartment, in passenger seat back, lower right side | | |
| M55D | Front Seat Vertical Adjuster Actuator - Driver | — | In the driver seat, mounted to outboard side of seat cushion frame, at rear | | |
| M55P | Front Seat Vertical Adjuster Actuator - Passenger | — | In the passenger seat, mounted to outboard side of seat cushion frame, at rear | | |
| M56D | Front Seat Recliner Actuator - Driver | — | In the passenger compartment, in the driver seat back, lower left | | |
| M56P | Front Seat Recliner Actuator - Passenger | — | In the passenger compartment, in the passenger seat back, lower left | | |
| M64 | Starter | — | In the engine compartment, left rear, mounted to rear of engine block | •<br>• | •<br>•<br>• |
| M65 | Steering Column Telescope Actuator | N38 | In the instrument panel, driver side, mounted to the steering column, near bottom, forward of M68 Steering Column Tilt Wheel Actuator | | |
| M68 | Steering Column Tilt Wheel Actuator | N38 | In the instrument panel, driver side, mounted to the steering column, near bottom, rearward of M65 Steering Column Telescope Actuator | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| M73A | Front Seat Back Ventilation Blower - Driver | KQV | In the passenger compartment, in the driver seat back, near top | | |
| M73B | Front Seat Back Ventilation Blower - Passenger | KQV | In the passenger compartment, in the passenger seat back, near top | | |
| M73D | Front Seat Cushion Ventilation Blower - Driver | KQV | In the passenger compartment, in the driver seat cushion | | |
| M73P | Front Seat Cushion Ventilation Blower - Passenger | KQV | In the passenger compartment, in the passenger seat cushion | | |
| M74D | Front Side Door Window Regulator Motor - Driver | — | Inside the driver door, behind trim panel, near center of the door | | |
| M74LR | Rear Side Door Window Regulator Motor - Left | — | Inside the left rear door, behind trim panel, near center of the door | •<br>• | |
| M74P | Front Side Door Window Regulator Motor - Passenger | — | Inside the passenger door, behind trim panel, near center of the door | | |
| M74RR | Rear Side Door Window Regulator Motor - Right | — | Inside the right rear door, behind trim panel, near center of the door | •<br>• | |
| M75 | Windshield Wiper Motor | — | Outside the vehicle, at the left rear of the engine compartment, below the left lower corner of the windshield | | |
| M77D | Outside Rearview Mirror Actuator - Driver | — | Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver | — | — |
| M77P | Outside Rearview Mirror Actuator - Passenger | — | Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger | — | — |
| M78D | Outside Rearview Mirror Folding Actuator - Driver | A45 | Outside the vehicle, at the front of the driver door, within the A9A Outside Rearview Mirror - Driver | — | — |
| M78P | Outside Rearview Mirror Folding Actuator - Passenger | A45 | Outside the vehicle, at the front of the passenger door, within the A9B Outside Rearview Mirror - Passenger | — | — |
| M81 | Sunroof Sunshade Motor | C3U | In the passenger compartment, above headliner, at the rear of the sunroof, right of K61 Sunroof Control Module | | |
| M95L | Assist Step Motor - Left | B3L | Under the vehicle, along the left frame rail, under the driver door | — | — |
| M95R | Assist Step Motor - Right | B3L | Under the vehicle, along the right frame rail, under the passenger door | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| M96A | Active Grille Air Shutter Actuator 1 | VTI | At the front of the vehicle, center, attached radiator core support, | •<br>• | |
| M96B | Active Grille Air Shutter Actuator 2 | WMI | At the front of the vehicle, center, attached radiator core support, below M96 Active Grille Air Shutter Actuator | | |
| M97 | Fuel Tank Filler Door Lock Actuator | N08 | Under the left rear of the vehicle, rear of the left rear wheelhouse liner | — | |
| M103 | Turbocharger Vane Position Actuator | LZ0 | In the engine compartment, right side, mounted to turbocharger | | |
| M104L | Parking Brake Actuator - Left | — | Under the vehicle, left rear, attached to the left rear brake caliper | | |
| M104R | Parking Brake Actuator - Right | — | Under the vehicle, right rear, attached to the right rear brake caliper | | |
| M107LR | Folding Rear Seat Back Actuator - Left | ATN / ATT | In the passenger compartment, left side, under 2nd row seat cushion | •<br>• | |
| M107RR | Folding Rear Seat Back Actuator - Right | ATN / ATT | In the passenger compartment, right side, under 2nd row seat cushion | •<br>• | |
| M108LR | 3rd Row Seat Back Pivot Actuator Motor - Left | AS8 | In the passenger compartment, left side, below bottom outer side of the 3rd row seat back | | |
| M108RR | 3rd Row Seat Back Pivot Actuator Motor - Right | AS8 | In the passenger compartment, right side, below bottom outer side of the 3rd row seat back | | |
| M109LR | Folding 3rd Row Seat Back Actuator - Left | AS8 | In the passenger compartment, left side, in seat back, near middle of outer side of the 3rd row seat back | | |
| M109RR | Folding 3rd Row Seat Back Actuator - Right | AS8 | In the passenger compartment, right side, in seat back, near middle of outer side of the 3rd row seat back | | |
| M122 | Exhaust Pressure Regulator Valve | LZ0 | Under the vehicle, right side, in exhaust pipe, between front of Fuel Tank and Emission Reduction Fluid Tank | | |
| M123 | Transmission Park Valve Lock Solenoid Actuator | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| M135 | Differential Lock Motor | G96 | Under the vehicle, center rear, within differential housing | •<br>• | |
| P13 | Horn | — | At the front of the vehicle, right side, behind grille, attached to radiator core support | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| P16 | Instrument Panel Cluster Control Module | — | In the passenger compartment, in the driver side of the instrument panel | •<br>• | •<br>• |
| P18 | Door Lock Status Indicator | UTJ | In the driver door panel, at top rear of door panel | | |
| P19AFC | Front Floor Speaker - Console | UQS | In the passenger compartment, front center, beneath the front of the floor console | | |
| P19AG | Radio Front Side Door Speaker - Left | — | In the left front door, lower front corner of door, behind door trim panel | | |
| P19AH | Radio Front Side Door Speaker - Right | — | In the right front door, lower front corner of door, behind door trim panel | | |
| P19AL | Radio Rear Side Door Speaker - Left | — | In the left rear door, lower front corner of door, behind door trim panel | •<br>• | |
| P19AM | Radio Rear Side Door Speaker - Right | — | In the right rear door, lower front corner of door, behind door trim panel | •<br>• | |
| P19B | Radio Front Center Speaker | UQS | In the instrument panel, at center top | •<br>• | |
| P19H | Radio Windshield Side Garnish Molding Speaker - Left Front | UQS | In the passenger compartment, in the top of the left side of the instrument panel | •<br>• | |
| P19J | Radio Front Speaker - Instrument Panel Left | UQF | In the passenger compartment, in the top of the left side of the instrument panel | •<br>• | •<br>• |
| P19M | Radio Body Rear Corner Upper Garnish Molding Speaker - Left | UQS | In the cargo area, left rear corner, at d-pillar, behind left rear window garnish molding, | •<br>• | |
| P19V | Radio Windshield Side Garnish Molding Speaker - Right Front | UQS | In the passenger compartment, in the top of the right side of the instrument panel | •<br>• | |
| P19W | Radio Front Speaker - Instrument Panel Right | UQF | In the passenger compartment, in the top of the right side of the instrument panel | •<br>• | |
| P19Z | Radio Body Rear Corner Upper Garnish Molding Speaker - Right | UQS | In the cargo area, right rear corner, at d-pillar, behind right rear window garnish molding, | •<br>• | |
| P22E | Video Display - Left Front Seat Back | UW9 | In the passenger compartment, left side, mounted to the driver seat back | | |
| P22F | Video Display - Right Front Seat Back | UW9 | In the passenger compartment, right side, mounted to the passenger seat back | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| P25 | Content Theft Deterrent Alarm | UTR | Outside the vehicle, at the left rear of the engine compartment, below the left lower corner of the windshield, left of M75 Windshield Wiper Motor | | |
| P29 | Head-Up Display | UV6 | In the passenger compartment, at the left side of the instrument panel, near the windshield | | •<br>• |
| P34D | Side Object Detection Indicator - Driver | — | Outside of the vehicle, left side, part of E17D Outside Rearview Mirror Glass - Driver, within A9A Outside Rearview Mirror - Driver | — | — |
| P34P | Side Object Detection Indicator - Passenger | — | Outside of the vehicle, right side, part of E17P Outside Rearview Mirror Glass - Passenger, within A9B Outside Rearview Mirror - Passenger | — | — |
| P37LG | Rear Closure Hands Free Alarm | TCP | At rear of vehicle, behind liftgate trim panel, on left side | | |
| P43 | Forward Collision Alert Display | UEU - UV6 | In the passenger compartment, in the top of the instrument panel, near the windshield, in front of the driver | | |
| P45L | Front Seat Lane Departure Warning Actuator - Left | HS1 | In the passenger compartment, under the driver seat cushion, on the left rear side | | |
| P45R | Front Seat Lane Departure Warning Actuator - Right | HS1 | In the passenger compartment, under the driver seat cushion, on the right rear side | | |
| P50 | Regulatory Emergency Call Backup Speaker | UER | In the passenger compartment, behind the lower left side of the instrument panel, below the right side of steering column | | |
| P51 | Steering Wheel LED Display | UKL | In the passenger compartment, left front, at the top of the steering wheel | | |
| Q2 | Air Conditioning Clutch | — | • (L84/L87) In the engine compartment, right front, mounted to the right lower side of the engine, part of G1 A/C Compressor<br>• (LZ0) In the engine compartment, left front, mounted to the left lower side of the engine, part of G1 A/C Compressor | •<br>• | |
| Q4 | Automatic Level Control Solenoid Valve | F47 | Under the vehicle, left rear, mounted to the inboard side of the driver side frame rail, attached to G4 Automatic Level Control Air Compressor | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q6F | Camshaft Position Actuator Solenoid Valve - Intake | L84 / L87 | In the engine compartment, front center, mounted to timing chain cover, above crankshaft harmonic balancer, right side | | |
| Q12 | Evaporative Emission Canister Purge Solenoid Valve | L84 / L87 | In the engine compartment, front center, mounted to intake manifold, to the left of Q38 Throttle Body | | |
| Q13 | Evaporative Emission Canister Vent Solenoid Valve | L84 / L87 | On the underbody, at the top left side of the fuel tank | •<br>• | |
| Q14A | Exhaust Gas Recirculation Valve 1 | LZ0 | In the engine compartment, right rear, mounted to the exhaust, near the top right side of the engine | | |
| Q14B | Exhaust Gas Recirculation Valve 2 | LZ0 | In the engine compartment, right rear lower, in the exhaust between the turbocharger and nitrogen oxides catalytic converter | | |
| Q17A | Fuel Injector 1 | — | • (L84/L87) In the engine compartment, underneath intake manifold, next to cylinder 1 intake port on the cylinder head<br>• (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 1 | •<br>• | •<br>• |
| Q17B | Fuel Injector 2 | — | • (L84/L87) In the engine compartment, underneath intake manifold, next to cylinder 2 intake port on the cylinder head<br>• (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 2 | •<br>• | •<br>• |
| Q17C | Fuel Injector 3 | — | • (L84/L87) In the engine compartment, underneath intake manifold, next to cylinder 3 intake port on the cylinder head<br>• (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 3 | •<br>• | •<br>• |
| Q17D | Fuel Injector 4 | — | • (L84/L87) In the engine compartment, underneath intake manifold, next to cylinder 4 intake port on the cylinder head<br>• (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 4 | •<br>• | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q17E | Fuel Injector 5 | — | • (L84/L87) In the engine compartment, underneath intake manifold, next to cylinder 5 intake port on the cylinder head<br>• (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 5 | •<br>• | •<br>• |
| Q17F | Fuel Injector 6 | — | • (L84/L87) In the engine compartment, underneath intake manifold, next to cylinder 6 intake port on the cylinder head<br>• (LZ0) In the engine compartment, center, mounted to valve cover above cylinder 6 | •<br>• | •<br>• |
| Q17G | Fuel Injector 7 | L84 / L87 | In the engine compartment, underneath intake manifold, next to cylinder 7 intake port on the cylinder head | | |
| Q17H | Fuel Injector 8 | L84 / L87 | In the engine compartment, underneath intake manifold, next to cylinder 8 intake port on the cylinder head | | |
| Q18A | Fuel Pressure Regulator 1 | LZ0 | In the engine compartment, left rear side of engine, below Q18C Fuel Pressure Regulator 3, attached to G18 High Pressure Fuel Pump | | |
| Q18B | Fuel Pressure Regulator 2 | LZ0 | In the engine compartment, left side of engine, mounted to the left rear side of the valve cover | | |
| Q18C | Fuel Pressure Regulator 3 | LZ0 | In the engine compartment, left rear side of engine, above Q18A Fuel Pressure Regulator 1, attached to G18 High Pressure Fuel Pump | | |
| Q20 | Intake Airflow Control Valve | LZ0 | In the engine compartment, center, left side of engine, at the rear of the Charge Air Cooler Outlet Air Hose | | |
| Q22 | Intake Manifold Tuning Solenoid Valve | LZ0 | In the engine compartment, front center, attached to the front of the intake manifold | | |
| Q37LFB | Front Shock Absorber Actuator - Left | Z95 | In the left front wheel well, attached to the left front lower control arm and left front strut tower, part of strut assembly | | |
| Q37LRB | Rear Shock Absorber Actuator - Left | Z95 | In the left rear wheel well, attached to the left rear lower control arm and left rear strut tower, part of strut assembly | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q37RFB | Front Shock Absorber Actuator - Right | Z95 | In the right front wheel well, attached to the right front lower control arm and right front strut tower, part of strut assembly | | |
| Q37RRB | Rear Shock Absorber Actuator - Right | Z95 | In the right rear wheel well, attached to the right rear lower control arm and right rear strut tower, part of strut assembly | •<br>• | |
| Q38 | Throttle Body | L84 / L87 | In the engine compartment, at the front of the engine, mounted to the intake manifold inlet | | |
| Q44 | Engine Oil Pressure Control Solenoid Valve | L87 / LZ0 | • (L87) In the engine compartment, front center, within oil pan, below the front cover<br>• (LZ0) In the engine compartment, near rear, within oil pan | •<br>• | |
| Q46 | Air Conditioning Compressor Solenoid Valve | — | • (L84/L87) In the engine compartment, right front, mounted to the right lower side of the engine, part of G1 A/C Compressor<br>• (LZ0) In the engine compartment, left front, mounted to the left lower side of the engine, part of G1 A/C Compressor | •<br>• | |
| Q61 | Reductant Fluid Injector | LZ0 | In the engine compartment, right front, mounted to the exhaust, in front of diesel particulate filter | | |
| Q61B | Reductant Fluid Injector 2 | LZ0 | In the engine compartment, right front, mounted to the exhaust, in front of diesel particulate filter | | |
| Q74 | Engine Coolant Bypass Valve | LZ0 | In the engine compartment, right rear, forward of the G18 High Pressure Fuel Pump | | |
| Q77A | Transmission Control Solenoid Valve 1 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77B | Transmission Control Solenoid Valve 2 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77C | Transmission Control Solenoid Valve 3 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77D | Transmission Control Solenoid Valve 4 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77E | Transmission Control Solenoid Valve 5 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77F | Transmission Control Solenoid Valve 6 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| Q77G | Transmission Control Solenoid Valve 7 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77H | Transmission Control Solenoid Valve 8 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q77J | Transmission Control Solenoid Valve 9 | — | Under the vehicle, inside the T12 Automatic Transmission | — | |
| Q83AA | Valve Lifter Oil Solenoid Valve - Cylinder 1 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 1 | | |
| Q83AB | Valve Lifter Oil Solenoid Valve - Cylinder 2 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 2 | | |
| Q83AC | Valve Lifter Oil Solenoid Valve - Cylinder 3 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 3 | | |
| Q83AD | Valve Lifter Oil Solenoid Valve - Cylinder 4 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 4 | | |
| Q83AE | Valve Lifter Oil Solenoid Valve - Cylinder 5 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 5 | | |
| Q83AF | Valve Lifter Oil Solenoid Valve - Cylinder 6 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 6 | | |
| Q83AG | Valve Lifter Oil Solenoid Valve - Cylinder 7 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 7 | | |
| Q83AH | Valve Lifter Oil Solenoid Valve - Cylinder 8 | L84 / L87 | In the engine compartment, mounted to the engine, beneath the engine block valley cover, next to cylinder 8 | | |
| Q97 | Engine Coolant Flow Control Valve | LZ0 | In the engine compartment, left, rearward of G13 Generator | — | — |
| Q97M | Engine Coolant Flow Control Valve - Main | LZ0 | In the engine compartment, left, attached to the front of Q97 Engine Coolant Flow Control Valve | | |
| R29 | Fuel Filter | LZ0 | Under the vehicle, left side, mounted to inboard side of left frame rail, rear of transmission crossmember | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| R44 | Radio AM Antenna Signal Filter Module - Center High Mounted Stop Lamp | — | At the rear of the vehicle, above rear of headliner, center, below spoiler | — | •<br>• |
| S3B | Automatic Transmission Electronic Control | — | In the steering column, right side stalk | •<br>• | |
| S13D | Door Lock Switch - Driver | - (A45 / AUN) | In the passenger compartment, in the driver door trim panel, forward of door handle | | |
| S13LR | Door Lock Switch - Left Rear | — | In the passenger compartment, left rear, in the left rear door trim panel, forward of handle | | |
| S13P | Door Lock Switch - Passenger | — | In the passenger compartment, in the passenger door trim panel, forward of door handle | | |
| S13RR | Door Lock Switch - Right Rear | — | In the passenger compartment, right rear, in the right rear door trim panel, forward of handle | | |
| S25 | Garage Door Opener Transmitter | UG1 | In the passenger compartment, front center, mounted to top of A103 Roof Console | — | — |
| S26 | Hazard Warning Switch | — | In the passenger compartment, front center, in the instrument panel trim pad, below A22 Radio Control | •<br>• | |
| S30 | Headlamp Switch | — | In the passenger compartment, left of the steering column, in the instrument panel switch trim plate, right of S126 Ride Control Switch | •<br>• | |
| S33 | Steering Wheel Horn Contact | — | In the passenger compartment, in the center of the steering wheel, behind the driver side air bag | — | •<br>• |
| S38 | On/Off Vehicle Switch | — | In the passenger compartment, right of the steering column, in the instrument panel | | |
| S45A | Liftgate Release Switch - Exterior | — | At the rear of the vehicle, center, at the bottom of the liftgate, at handle | — | |
| S47D | Front Seat Adjuster Memory Switch - Driver | A45 / AUN | In the passenger compartment, on the driver door panel, forward of door handle | | |
| S64D | Front Seat Adjuster Switch - Driver | — | In the passenger compartment, mounted to the outboard side of the driver seat cushion | | •<br>• |
| S64P | Front Seat Adjuster Switch - Passenger | — | In the passenger compartment, mounted to the outboard side of the passenger seat cushion | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| S65D | Front Seat Lumbar Switch - Driver | — | In the passenger compartment, mounted to the outboard side of the driver seat cushion, rearward of S64D Front Seat Adjuster Switch - Driver | | •<br>• |
| S65P | Front Seat Lumbar Switch - Passenger | — | In the passenger compartment, mounted to the outboard side of the passenger seat cushion, rearward of S65P Front Seat Lumbar Switch - Passenger | | •<br>• |
| S70E | Radio Favorites Switch - Steering Wheel | — | In the passenger compartment, on the left rear side of the steering wheel | | |
| S70F | Radio Volume Switch - Steering Wheel | — | In the passenger compartment, on the right rear side of the steering wheel | | |
| S70L | Cruise Control Switch | — | In the passenger compartment, on the left side of the steering wheel | | |
| S70R | Radio Control Switch - Steering Wheel | — | In the passenger compartment, on the right side of the steering wheel | | |
| S71 | Steering Column Tilt Wheel and Telescope Switch | N38 | In the passenger compartment, left front, left side of steering column, mounted to the instrument panel steering column lower trim cover | •<br>• | |
| S76 | Trailer Brake Control Switch | JL1 | In the passenger compartment, left of the steering column, in the instrument panel switch trim plate, right of S30 Headlamp Switch | •<br>• | |
| S78 | Turn Signal Switch | — | In the passenger compartment, on the left side of the steering column | •<br>• | |
| S79D | Front Side Door Window Control Switch - Driver | — | In the passenger compartment, left front, mounted to the driver door trim panel, below the door handle | | •<br>• |
| S79LR | Rear Side Door Window Switch - Left | — | In the left rear door trim panel, at front of arm rest | | |
| S79P | Front Side Door Window Switch - Passenger | — | In the passenger compartment, right front, mounted to the passenger door trim panel, below the door handle | | |
| S79RR | Rear Side Door Window Switch - Right | — | In the right rear door trim panel, at front of arm rest | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| S86 | Vehicle Stability Control System Switch | — | In the passenger compartment, left front, mounted to left instrument panel trim bad, below the HVAC vent, right of S91 Parking Brake Control Switch | •<br>• | |
| S91 | Parking Brake Control Switch | — | In the passenger compartment, left front, mounted to left instrument panel trim bad, below the HVAC vent, left of S86 Vehicle Stability Control System Switch | •<br>• | |
| S126 | Ride Control Switch | — | In the passenger compartment, left front, left side of the instrument panel, left of S30 Headlamp Switch | •<br>• | |
| S141 | Liftgate Window Release Switch - Exterior | — | At the rear of the vehicle, mounted to the liftgate, right of E7R Rear License Plate Lamp - Right | | |
| S143L | Rear Seat Back Folding Switch - 2nd Row Left | ATN / ATT | In the passenger compartment, left side, on C-Pillar trim | •<br>• | |
| S143R | Rear Seat Back Folding Switch - 2nd Row Right | ATN / ATT | In the passenger compartment, right side, on C-Pillar trim | •<br>• | |
| S144A | Rear Seat Back Folding Switch - 2nd Row Rear Compartment | ATN / ATT | In the cargo area, right rear, below right rear window and d-pillar, mounted to right rear trim panel | •<br>• | |
| S144B | 3rd Row Seat Folding Switch - Rear Compartment | AS8 | In the cargo area, right rear, below right rear window and d-pillar, mounted to right rear trim panel, rearward of S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment | •<br>• | |
| S145 | Beverage Cooler Switch | DCK | In the passenger compartment, center, in the floor console compartment, right of X92CF USB 2 Port Receptacle - Floor Console Front | | |
| S194 | Emergency Vehicle Warning Rear Lamp Switch | 5W4 / 9C1 | At the rear of the vehicle, within liftgate, at the center of the bottom of the liftgate, left of A23C Liftgate Latch | | |
| T1 | DC/AC Converter Control Module | KI4 / KI5 | In the luggage compartment, right rear, below D-pillar, behind right quarter lower rear trim panel, right of liftgate opening near center | •<br>• | •<br>•<br>• |
| T3 | Audio Amplifier | UQS | In the rear passenger compartment, mounted behind left side luggage compartment trim, below the rear window | •<br>• | •<br>•<br>• |
| T4M | Radio Antenna | — | At the rear of the vehicle, part of the rear spoiler | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| T4P | High Frequency Antenna | — | Mounted to the vehicle roof, left front | | •<br>•<br>• |
| T4TA | Auxiliary Wireless Communication Interface Antenna | — | In the instrument panel, right of center top, mounted to instrument panel | •<br>• | |
| T8A | Ignition Coil 1 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 1 | | |
| T8B | Ignition Coil 2 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 2 | | |
| T8C | Ignition Coil 3 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 3 | | |
| T8D | Ignition Coil 4 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 4 | | |
| T8E | Ignition Coil 5 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 5 | | |
| T8F | Ignition Coil 6 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 6 | | |
| T8G | Ignition Coil 7 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 7 | | |
| T8H | Ignition Coil 8 | L84 / L87 | In the engine compartment, at the top of the engine, above cylinder 8 | | |
| T10E | Low Frequency Rear Compartment Antenna | - (5W4 / 9C1) | In the passenger compartment, left rear, beneath the front of the driver side passenger second row seat cushion, beneath the carpet | •<br>• | |
| T10G | Low Frequency Rear Bumper Antenna | — | At the rear of the vehicle, center, mounted to rear fascia | | |
| T10J | Low Frequency Instrument Panel Antenna | 5W4 / 9C1 / AZ3 | • (AZ3) In the passenger compartment, front center, mounted to the bottom of the center of instrument panel<br>• (5W4/9C1) In the passenger compartment, right side, mounted behind F101 Instrument Panel Airbag | | |
| T10JA | Low Frequency Instrument Panel Number 2 Antenna | 5W4 / 9C1 | In the instrument panel, mounted above the S38 On/Off Vehicle Switch | — | |
| T10KA | Low Frequency Console Number 2 Antenna | DCH / DCK / (D07 - (5W4 / 9C1)) | In the passenger compartment, center, mounted to the back of the front floor console rear trim panel | •<br>•<br>• | •<br>• |
| T10L | Low Frequency Body Side Antenna - Left | — | In the left rear door, at the front top | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| T10R | Low Frequency Body Side Antenna - Right | — | In the right rear door, at the front top | •<br>• | |
| T10U | Low Frequency Console Antenna - Front | — | • (-AZ3) In the floor console, mounted to backside of top trim panel, below cupholder<br>• (AZ3) Below rear of center seat, mounted to left side | •<br>•<br>•<br>• | •<br>• |
| T12 | Automatic Transmission | — | Under the vehicle, mounted to the rear of the engine | — | •<br>•<br>• |
| T19 | Multifunction Power Supply Converter | — | In the passenger compartment, right front, between the instrument panel and bulkhead | | |
| T22 | Wireless Accessory Charging Module | K7A | In the passenger compartment, forward of center, below the front floor console bin | •<br>•<br>• | |
| T35AF | Radio Antenna Amplifier - AM/FM | - U2Q | At the rear of the vehicle, above rear of headliner, center, below spoiler | •<br>• | •<br>• |
| T35FD | Radio Antenna Amplifier - FM2/DAB | U2Q | At the rear of the vehicle, above rear of headliner, center, below spoiler | •<br>• | •<br>•<br>• |
| W12FC | Blunt Cut - Front Seat/Center Console | 5W4 / 9C1 | In the passenger compartment, front center, under the right side of center seat cushion/floor console | — | — |
| W12H | Blunt Cut - Headliner Rear | 5W4 / 9C1 | In the cargo area, rear center, above the headliner, forward of left upper liftgate opening | — | — |
| W12HLF | Blunt Cut - Headliner Left Front | 5W4 / 9C1 | In the passenger compartment, left front, above headliner | — | — |
| W12RCL | Blunt Cut - Left Rear Cargo Trim | 5W4 / 9C1 | In the cargo area, left rear, near rear of wheel housing | — | — |
| W15DL | Blunt Cut - Strobe Lamps Left Front Door | 5W4 / 9C1 | In the left front door, attached to the upper forward area of the left front door, near attachment point for A9A Outside Rearview Mirror - Driver | | — |
| W15DR | Blunt Cut - Strobe Lamps Right Front Door | 5W4 / 9C1 | In the right front door, attached to the upper forward area of the right front door , near attachment point for A9B Outside Rearview Mirror - Passenger | | — |
| W15F | Blunt Cut - Grille Lamp and Siren Speaker | 5W4 / 9C1 | In the engine compartment, front, coiled at the radiator | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| W15FR | Blunt Cut - Strobe Lamps Rear Fascia | 5W4 / 9C1 | At the rear of the vehicle, right side, attached to the right corner of the rear fascia | — | — |
| W15HL | Blunt Cut - Strobe Lamps Left Headlamp | 5W4 / 9C1 | In the engine compartment, left front, rearward of E13LA Front Headlamp - Left | — | — |
| W15HR | Blunt Cut - Strobe Lamps Right Headlamp | 5W4 / 9C1 | In the engine compartment, right front, rearward of E13RA Front Headlamp - Right | — | — |
| W24 | Blunt Cut - Trailer Brakes Provision | - JJ1 | In the passenger compartment, within the instrument panel, driver side, attached to the instrument panel harness near K9 Body Control Module | | — |
| X23 | Multimedia Receptacle | - DCH | In the floor console, at front of section storage compartment opening | •<br>• | •<br>• |
| X50A | Engine Wiring Harness Junction Block | — | In the engine compartment, right front, in front of C1 Battery | | *Electrical Center Identification Views 9-36* |
| X50B | Battery Distribution Engine Compartment Fuse Block | — | In the engine compartment, right front, above C1 Battery | | *Electrical Center Identification Views 9-36* |
| X50EA | Battery Distribution Fuse Block - Auxiliary | 5W4 / 9C1 | In the cargo area, left rear, behind trim panel, above the C1B Battery - Auxiliary | — | *Electrical Center Identification Views 9-36* |
| X51AX | Instrument Panel Wiring Harness Junction Block - Auxiliary | 5W4 / 9C1 | In the passenger compartment, left front, within instrument panel, below steering column, above lower shield | — | *Electrical Center Identification Views 9-36* |
| X51R | Instrument Panel Wiring Harness Junction Block - Right | — | In the passenger compartment, right side of the instrument panel, behind side trim panel | | *Electrical Center Identification Views 9-36* |
| X53A | Body Wiring Harness Junction Block - Rear | — | In the cargo area, left rear, behind access panel | •<br>• | *Electrical Center Identification Views 9-36* |
| X81ACA | Front Floor Console Accessory Power Rear Receptacle - 110V AC | KI4 | • (-AZ3) In the passenger compartment, center, at the rear of the floor console, below A34 Heater and Air Conditioning Auxiliary Control<br>• (AZ3) In the passenger compartment, at the rear of the center seat, left of A34 Heater and Air Conditioning Auxiliary Control | •<br>•<br>•<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X81BCA | Front Floor Console Accessory Power Rear Receptacle - 220V AC | KI5 | • (-AZ3) In the passenger compartment, center, at the rear of the floor console, below A34 Heater and Air Conditioning Auxiliary Control<br>• (AZ3) In the passenger compartment, at the rear of the center seat, left of A34 Heater and Air Conditioning Auxiliary Control | •<br>•<br>•<br>• | |
| X81RA | Quarter Lower Rear Trim Panel Accessory Power Receptacle - 110V AC | KI4 | In the cargo area, right rear, below right rear window, mounted to right rear trim panel | •<br>• | |
| X81RB | Quarter Lower Rear Trim Panel Accessory Power Receptacle - 220V AC | KI5 | In the cargo area, right rear, below right rear window, mounted to right rear trim panel | •<br>• | |
| X83B | Audio/Video Receptacle | UW9 | In the passenger compartment, center, at the rear of the floor console, below A34 Heater and Air Conditioning Auxiliary Control | •<br>•<br>• | •<br>• |
| X84 | Data Link Connector | — | In the passenger compartment, at the bottom of the driver side of the instrument panel | | |
| X85 | Steering Wheel Airbag Coil | — | In the passenger compartment, behind the steering wheel | | •<br>• |
| X88B | Tow Vehicle Electrical Receptacle | — | At the rear of the vehicle, forward of the rear bumper fascia trailer hitch cover, to the left of the hitch | | •<br>•<br>• |
| X92BCL | USB Receptacle - 3rd Row Seat Left | — | In the passenger compartment, left rear, mounted to the left rear lower quarter trim panel, above the cup holder | •<br>• | |
| X92BCR | USB Receptacle - 3rd Row Seat Right | — | In the passenger compartment, right rear, mounted to the right rear lower quarter trim panel, above the cup holder | •<br>• | |
| X92CD | Dual Charge Only Receptacle - Floor Console Rear | — | • (-AZ3) In the passenger compartment, center, at the rear of the floor console, below A34 Heater and Air Conditioning Auxiliary Control<br>• (AZ3) In the passenger compartment, center, at the rear of the center seat, below A34 Heater and Air Conditioning Auxiliary Control | •<br>•<br>•<br>• | •<br>• |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X92CF | USB 2 Port Receptacle - Floor Console Front | — | In the passenger compartment, front center, mounted to the right side of the floor console, in front of the cup holders | •<br>•<br>• | •<br>•<br>• |
| X92IP | USB 2 Port Receptacle - Instrument Panel | AZ3 | In the passenger compartment, at the center of the instrument panel, beneath A26 Heater and Air Conditioning User Interface Control - Front |  | •<br>• |
| X125 | Engine Wiring Harness to Body Wiring Harness | — | In the engine compartment, left side, forward of X400 | •<br>•<br>• |  |
| X128B | Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Harness | — | In the engine compartment, under the intake manifold. | — |  |
| X128C | Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness | L84 / L87 | In the engine compartment, left front, near left side of oil pump housing | •<br>• |  |
| X129A | Camshaft Position Sensor Wire to Oil Pump Flow Control Solenoid Valve Harness | L87 | In the engine compartment, front center, right side of timing cover | •<br>• |  |
| X129B | Engine Wiring Harness to Oil Pump Flow Control Solenoid Valve Wiring Harness | LZ0 | In the engine compartment, right rear side, below M64 Starter | •<br>• |  |
| X160 | Engine Wiring Harness to Fuel Injector Wiring Harness - Left | L84 / L87 | In the engine compartment, rear of the engine near the top left | •<br>•<br>• | •<br>• |
| X160 | Engine Wiring Harness to Fuel Injector Wiring Harness | LZ0 | In the engine compartment, at front of the engine, at bracket at front of cylinder head | •<br>•<br>• | •<br>• |
| X161 | Engine Wiring Harness to Fuel Injector Wiring Harness - Right | L84 / L87 | In the engine compartment, rear of the engine near the top right |  |  |
| X163 | Engine Wiring Harness to Diesel Glow Plug Wiring Harness | LZ0 | In the engine compartment, left front, beneath air charge cooler outlet hose | •<br>• |  |
| X176 | Automatic Transmission Wiring Harness to Automatic Transmission Wiring Harness - Case | — | Under the vehicle, inside the T12 Automatic Transmission | — |  |
| X210 | Instrument Panel Wiring Harness to Body Wiring Harness | — | Behind the instrument panel, right side, near base of A-pillar, between X217 and X214 | •<br>• |  |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X211 | Instrument Panel Wiring Harness to Body Wiring Harness | — | Behind the instrument panel, left side, near base of A-pillar | •<br>• | |
| X214 | Instrument Panel Wiring Harness to Body Wiring Harness | — | Behind the instrument panel, right side, near base of A-pillar, between X210 and X216 | •<br>• | |
| X215 | Instrument Panel Wiring Harness to Instrument Panel Wiring Harness | 5W4 / 9C1 | Behind the instrument panel, right side, near base of A-pillar, between X210 and X217 | — | |
| X216 | Instrument Panel Wiring Harness to Body Wiring Harness | — | Behind the instrument panel, right side, near base of A-pillar, rearward of X210 | •<br>• | |
| X217 | Instrument Panel Wiring Harness to Body Wiring Harness | — | Behind the instrument panel, right side, near base of A-pillar, forward of X210 | | |
| X225A | Front Floor Console Wiring Harness to Body Wiring Harness | DCH / DCK / D07 | In the passenger compartment, right of center, underneath inside of passenger seat | •<br>•<br>•<br>• | |
| X225B | Instrument Panel Wiring Harness to Front Floor Console Wiring Harness | — | In the passenger compartment, right front center of floor console, above X225C | •<br>•<br>•<br>• | |
| X225C | Front Floor Console Wiring Harness to Instrument Panel Wiring Harness | — | In the passenger compartment, right front center of floor console, below X225B | •<br>•<br>•<br>• | |
| X225D | Front Seat Wiring Harness - Center to Body Wiring Harness | AZ3 | In the passenger compartment, right of center, underneath inside of passenger seat | •<br>• | |
| X226 | Front Floor Console Wiring Harness to Body Wiring Harness | UW9 | In the passenger compartment, right of center, left of X225A | •<br>•<br>•<br>• | |
| X250 | Instrument Panel Wiring Harness to Heater Wiring Harness | — | In the passenger compartment, center, within instrument panel, near HVAC assembly | •<br>• | |
| X251 | Body Wiring Harness to Auxiliary Heater and Air Conditioning Wiring Harness | — | In the cargo area, right rear, behind right quarter lower rear trim panel | •<br>• | |
| X251L | Heater Wiring Harness to Body Wiring Harness | C3A | In the passenger compartment, right front, behind kick panel below X210 | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X251P | Instrument Panel Wiring Harness to Body Harness | 5W4 / 9C1 | Behind the instrument panel, right side, near base of A-pillar | — | |
| X252 | Body Wiring Harness to Body Wiring Harness | 5W4 / 9C1 | Behind the instrument panel, left side, near base of A-pillar | — | |
| X300G | Body Wiring Harness to Police Accessories Wiring Harness | 5W4 / 9C1 | In the engine compartment, front, left of B55 Engine Compartment Cover Switch | — | |
| X300L | Body Wiring Harness to Police Accessories Wiring Harness | 5W4 / 9C1 | In the engine compartment, left front, rearward of E13LA Front Headlamp - Left | — | |
| X300R | Body Wiring Harness to Police Accessories Wiring Harness | 5W4 / 9C1 | In the engine compartment, right front, rearward of E13RA Front Headlamp - Right | — | |
| X309 | Body Wiring Harness to Body Wiring Harness | — | In the cargo area, right rear, above headliner, at right top front of liftgate opening | | |
| X328 | Front Seat Wiring Harness - Driver to Body Wiring Harness | — | In the passenger compartment, under the driver seat | •<br>• | |
| X329 | Body Wiring Harness to Front Seat Wiring Harness - Driver | UW9 | In the passenger compartment, left front, beneath the driver seat cushion, rearward of X328 | •<br>• | |
| X333 | Front Seat Wiring Harness - Passenger to Body Wiring Harness | — | In the passenger compartment, under the passenger seat | •<br>• | •<br>• |
| X340A | Body Wiring Harness to 2nd Row Seat Wiring Harness - Left Cushion | — | In the passenger compartment, left center, beneath the left 2nd row seat | •<br>•<br>• | |
| X344A | Body Wiring Harness to 2nd Row Seat Wiring Harness - Right Cushion | — | In the passenger compartment, right rear, beneath right 2nd row seat cushion | •<br>•<br>• | |
| X344L | Body Wiring Harness to Front Seat Wiring Harness - Passenger | UW9 | In the passenger compartment, under the passenger seat, rearward of X333 | •<br>• | |
| X346 | Body Wiring Harness to 3rd Row Seat Wiring Harness | — | In luggage compartment, under carpet, near center | •<br>•<br>• | |
| X353 | Fuel Tank Filler Door Lock Release Wiring Harness to Body Wiring Harness | N08 | Under the vehicle, left rear, behind left rear tire | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X370A | Headlining Trim Panel Harness to Instrument Panel Wiring Harness | — | In the passenger compartment, front right side, within instrument panel, beneath the instrument panel upper trim panel | •<br>•<br>• | |
| X370B | Headlamp Automatic Control Ambient Light Sensor Wiring Harness to Headlining Trim Panel Harness | — | In the passenger compartment, forward of headliner, above A10 Inside Rearview Mirror | •<br>•<br>• | |
| X372 | Headlining Trim Panel Harness to Police Accessories Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left front, above headliner | | |
| X375 | Sunroof Wiring Harness to Headlining Trim Panel Harness | C3U | In the passenger compartment, front center, above headliner, near the rear of A103 Roof Console | •<br>• | |
| X385 | Headlining Trim Panel Harness to Police Accessories Wiring Harness | 5W4 / 9C1 | In the passenger compartment, front center, above headliner, rearward of A103 Roof Console | | |
| X396 | Instrument Panel Wiring Harness to Antenna Wiring Harness | — | In the passenger compartment, left front, behind top of driver side A-pillar trim | •<br>• | |
| X397 | Instrument Panel Wiring Harness to Antenna Wiring Harness | U2Q | In the passenger compartment, left front, behind top of driver side A-pillar trim | •<br>• | |
| X400 | Chassis Wiring Harness to Body Wiring Harness | — | In the engine compartment, left side, rearward of X125 | •<br>•<br>• | |
| X402 | Chassis Wiring Harness to Body Wiring Harness | — | Under the vehicle, right rear, at outside of frame at rear | •<br>•<br>• | |
| X403 | Engine Wiring Harness to Chassis Wiring Harness | — | In the engine compartment, left front, above the engine crossmember | •<br>•<br>•<br>• | •<br>• |
| X404L | Assist Step M to Chassis Wiring Harness | B3L | Under the vehicle, left side, outside of left frame rail, near transmission crossmember | •<br>• | |
| X404R | Assist Step M to Chassis Wiring Harness | B3L | Under the vehicle, right side, outside of right frame rail, near transmission crossmember | •<br>• | |
| X405D | Chassis Wiring Harness to Power Steering Wiring Harness Extension Harness | — | In the engine compartment, left front, above steering gear | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X405P | Power Steering Wiring Harness to Power Steering Control Module Wiring Harness | — | In the engine compartment, front center, above steering gear | | |
| X410 | Rear Body Structure Stop Lamp to Body Wiring Harness | — | Under the vehicle, left rear, behind left rear tire | | |
| X415 | Transfer Case Selector Shift Control Switch Wiring Harness Extension Harness to Engine Wiring Harness | NP0 / NQH | In the engine compartment, left front, beneath K71 Transmission Control Module | •<br>• | |
| X415R | Chassis Wiring Harness to Differential Carrier Lock Wiring Harness | G96 | Under the vehicle, left rear, behind fuel tank | •<br>•<br>• | |
| X420 | Rear Body Structure Stop Lamp to Body Wiring Harness | — | Under the vehicle, right rear, behind right rear tire | | |
| X500 | Front Side Door Door Wiring Harness - Driver to Body Wiring Harness | — | In the driver door jamb, front, mounted to the body | | |
| X505 | Front Side Door Door Wiring Harness - Driver to Front Side Door Door Lock Door Wiring Harness - Driver | — | In the driver door, behind the driver door panel, above speaker grille | •<br>• | |
| X600 | Front Side Door Door Wiring Harness - Passenger to Body Wiring Harness | — | In the right front door jamb, front, mounted to the body | | |
| X602 | Body Wiring Harness to Body Rear Wiring Harness Extension Harness | KI5 | In the rear compartment, left side, underneath rear quarter glass window, behind trim | •<br>• | |
| X604A | Engine Harness to Active Grille Air Shutter Harness | — | In the engine compartment, left front, near the radiator core support | •<br>•<br>•<br>• | |
| X604B | Aeroshutter Extension Wiring Harness to Aeroshutter Jumper Wiring Harness | WMI | In the engine compartment, left front, at left bottom of M96A Active Grille Air Shutter Actuator 1 | | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X605 | Front Side Door Door Wiring Harness - Passenger to Front Side Door Door Lock Door Wiring Harness - Passenger | — | In the passenger door, behind the passenger door panel, above speaker grille | •<br>• | |
| X700 | Rear Side Door Door Wiring Harness - Left to Body Wiring Harness | — | In the left rear door jamb, front, mounted to the body | •<br>• | |
| X705 | Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left | — | In the left rear door, attached to the door trim, at the front of the door, rearward of X706 | •<br>•<br>• | |
| X706 | Rear Side Door Door Wiring Harness - Left to Rear Side Door Door Lock Door Wiring Harness - Left | — | In the left rear door, attached to the door trim, at the front of the door, forward of X705 | •<br>•<br>• | |
| X800 | Rear Side Door Door Wiring Harness - Right to Body Wiring Harness | — | In the right rear door jamb, front, mounted to the body | •<br>• | |
| X805 | Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right | — | In the right rear door, attached to the door trim, at the front of the door, rearward of X806 | •<br>•<br>• | |
| X806 | Rear Side Door Door Wiring Harness - Right to Rear Side Door Door Lock Door Wiring Harness - Right | — | In the right rear door, attached to the door trim, at the front of the door, forward of X805 | •<br>•<br>• | |
| X900R | Body Wiring Harness to Police Accessories Wiring Harness | 5W4 / 9C1 | At the rear of the vehicle, right rear, forward of breakout to X420 | — | |
| X904L | Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Left | — | Under left rear of vehicle, attached to top of frame, above front of left rear trailing arm, left of X904L2 | •<br>•<br>• | |
| X904R | Chassis Wiring Harness to Chassis Rear Wiring Harness Extension Harness - Right | — | Under right rear of vehicle, attached to top of frame, above front of right rear trailing arm, right of X904R2 | •<br>•<br>• | |
| X905 | Liftgate Wiring Harness to Body Wiring Harness | — | At the rear of the vehicle, at the top, center of the liftgate | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X907 | Rear License Plate Lamp Wiring Harness to Liftgate Wiring Harness | — | At the rear of the vehicle, center, within liftgate | •<br>• | |
| X944 | Engine Wiring Harness to Engine Coolant Temperature Sensor Harness | LZ0 | In the engine compartment, left of center, above Q97 Engine Coolant Flow Control Valve | | |
| X950 | Front Object Alarm Sensor Wiring Harness to Body Wiring Harness | — | At the front of the vehicle, behind front fascia, at far right side, above X951 | •<br>•<br>• | |
| X951 | Front Object Alarm Sensor Wiring Harness to Body Wiring Harness | — | At the front of the vehicle, behind front fascia, at far right side, below X950 | •<br>•<br>• | |
| X953 | Body Wiring Harness to Rear Object Alarm Sensor Wiring Harness | — | At the rear of the vehicle, right rear, attached to right rear corner of rear fascia | •<br>• | |
| X954 | Body Wiring Harness to Forward Range Radar Sensor Wiring Harness | — | At the front of the vehicle, behind front fascia, at lower right side, attached to bumper support | | |
| X960 | Roof Wiring Harness to Body Wiring Harness | — | In the luggage compartment, left rear, on pillar forward of top left corner of liftgate opening | •<br>•<br>• | |
| X961 | Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness | L84 / L87 | In the engine compartment, left front, near the top of the left rocker arm cover, below X962 | •<br>• | |
| X962 | Engine Wiring Harness to Valve Rocker Arm Oil Control Valve Extension Harness | L84 / L87 | In the engine compartment, left front, near the top of the left rocker arm cover, above X961 | •<br>• | |
| X963 | Valve Rocker Arm Oil Control Valve Extension Harness to Valve Rocker Arm Oil Control Valve Harness | L84 / L87 | In the engine compartment, beneath the intake manifold, at the front of the engine block valley cover | | |
| X995D | Rearview Driver Information Camera Rear Closure Coaxial Cable to Rear License Plate Lamp Wiring Harness | DRZ | At the rear of the vehicle, center, within liftgate, above X907 | •<br>• | |
| X995R | Body Wiring Harness to Rearview Driver Information Camera Rear Closure Coaxial Cable | — | In the luggage compartment, above headliner, rear center, forward center top of liftgate opening | •<br>• | |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| X996 | Antenna Coaxial Cable to Antenna Coaxial Cable Jumper | DRZ | In the luggage compartment, above headliner, rear center, forward center top of liftgate opening, left of X995R | •<br>• | |
| X999 | Chassis Wiring Harness to Emission Reduction Fluid Tank Reservoir Wire Harness | LZ0 | Under the vehicle, right side, at the front of the reductant tank | •<br>•<br>• | |
| G100 | Body Wiring Harness | — | In the engine compartment, left side, attached to body, forward of G101A and G101B | | — |
| G101A | Body Wiring Harness | — | In the engine compartment, left side, attached to body, rearward of G100 and G103 | | — |
| G101B | Body Wiring Harness | — | In the engine compartment, left side, attached to body, rearward of G100 and G103 | | — |
| G102A | Body Wiring Harness | — | In the engine compartment, right side, right of C1 Battery | | — |
| G102B | Body Wiring Harness | — | In the engine compartment, right side, right of C1 Battery | | — |
| G103 | Body Wiring Harness | — | In the engine compartment, left side, attached to body, forward of G101A and G101B | | — |
| G104 | Starter Solenoid Cable | — | In the engine compartment, right side, attached to the inboard side of the right body structure, right of C1 Battery | •<br>• | — |
| G130 | Starter Solenoid Cable | — | • (L84/L87) In the engine compartment, right rear, mounted to the right rear side of the engine block, forward of M64 Starter<br>• (LZ0) In the engine compartment, right rear, mounted to the right rear side of the engine block, below M64 Starter | •<br>• | — |
| G131 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of upper control arm | •<br>• | — |
| G132 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of lower control arm, at frame | •<br>• | — |
| G133 | Ground Strap | — | • (LZ0) In the engine compartment, right rear, attached to the rear of the exhaust manifold<br>• (L84/L87) In the engine compartment, right rear, attached to the rear of the right cylinder head | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| G134 | Ground Strap | — | Under the vehicle, right front wheel well, behind inner fender, rearward of lower control arm, at body | •<br>• | — |
| G175 | Engine Wiring Harness | L84 / L87 | In the engine compartment, left rear, at the rear of the left cylinder head | | — |
| G176A | Engine Wiring Harness | L84 / L87 | In the engine compartment, left rear, at the rear of the right cylinder head | | — |
| G176B | Power Steering Wiring Harness | — | In the engine compartment, right front, below C1 Battery | | — |
| G176C | Engine Wiring Harness | LZ0 | In the engine compartment, front left side, behind E13LA Front Headlamp - Left, mounted to frame | | — |
| G177A | Engine Wiring Harness | L84 / L87 | n the engine compartment, attached to the left side of the engine block, below the front of the exhaust manifold | | — |
| G177D | Engine Wiring Harness | L84 / L87 | n the engine compartment, attached to the left side of the engine block, below the front of the exhaust manifold | | — |
| G178A | Engine Wiring Harness | LZ0 | In the engine compartment, right front, mounted to engine cylinder head | | — |
| G178B | Engine Wiring Harness | LZ0 | In the engine compartment, right front, mounted to engine cylinder head | | — |
| G200 | Instrument Panel Wiring Harness | — | In the instrument panel, right side, right of the instrument panel compartment | | — |
| G201A | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, below A-pillar, behind driver side kick panel, above G201B | | — |
| G201B | Body Wiring Harness | — | In the passenger compartment, left front, below A-pillar, behind driver side kick panel, below G201A | | — |
| G202 | Auxiliary Heater Harness | C3A | In the instrument panel, right side, right of the instrument panel compartment, below G200 | | — |
| G300A | Body Wiring Harness | — | In the passenger compartment, right side, at bottom of B-pillar | | — |
| G301 | Body Wiring Harness | — | In the passenger compartment, left side, at bottom of B-pillar | | — |
| G302 | Body Wiring Harness | — | In the passenger compartment, center, left of breakout to passenger seat harness | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| G303 | Body Wiring Harness | — | In the passenger compartment, center, between breakout to driver seat harness and breakout to K36 Restraints Control Module |  | — |
| G402 | Chassis Wiring Harness | — | Under the vehicle, right side, under the passenger door, attached to the right side frame rail | •<br>• | — |
| G404 | Chassis Wiring Harness | — | At right rear wheelhouse, attached to body structure forward of the top of shock absorber | •<br>• | — |
| G405A | Chassis Wiring Harness | — | At left rear wheelhouse, attached to body structure forward of the top of shock absorber |  | — |
| G405B | Auxiliary Battery Ground Harness | 5W4 / 9C1 | In the cargo area, left rear, behind left rear trim panel, left of bottom of liftgate opening |  | — |
| G407 | Chassis Wiring Harness | — | At right rear wheelhouse, attached to body structure rearward of the top of shock absorber | •<br>• | — |
| G408A | Body Wiring Harness | — | In the cargo area, right rear, behind right rear trim panel, right of top of liftgate opening |  | — |
| G408B | Body Wiring Harness | — | In the cargo area, right rear, behind right rear trim panel, right of top of liftgate opening |  | — |
| G409A | Body Wiring Harness | — | In the cargo area, left rear, behind left rear trim panel, left of top of liftgate opening |  | — |
| G409C | Body Wiring Harness | 5W4 / 9C1 | In the cargo area, left rear, behind left rear trim panel, left of top of liftgate opening |  | — |
| J100 | Engine Wiring Harness | LZ0 | In the engine compartment, left front, approximately 15 cm (5.9 in) right of breakout branch toward X163 |  | — |
| J101 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel<br>• (LZ0) In the engine compartment, left front, in breakout branch toward K20 Engine Control Module X2, approximately 12 cm (4.7 in) from main branch | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J102 | Front Object Alarm Sensor Wiring Harness | — | • (-UKL) At front of vehicle, left of center, behind fascia, approximately 60 cm (23.6 in) right of breakout to E2LF Front Side Marker Lamp - Left<br>• (UKL) At front left of vehicle, behind fascia, approximately 5 cm (2 in) right of breakout to B306AB Front Parking Assist Alarm Outer Sensor - Left | •<br>• | — |
| J103 | Front Object Alarm Sensor Wiring Harness | UKZ | At front left of vehicle, behind fascia, approximately 14 cm (5.5 in) left of breakout to B306BB Front Parking Assist Alarm Sensor - Left Middle | •<br>• | — |
| J105 | Front Object Alarm Sensor Wiring Harness | T40 | • (-UKL) At front of vehicle, right of center, behind fascia, approximately 44 cm (17.3 in) left of breakout to B174G Front View Driver Information Camera - Grille<br>• (UKL) At front of vehicle, right of center, behind fascia, approximately 4 cm (1.6 in)right of breakout to B306CB Front Parking Assist Alarm Sensor - Right Middle | •<br>• | — |
| J107 | Active Grille Air Shutter Harness | WMI | At the front of the vehicle, aeroshutter jumper wiring harness | — | — |
| J108 | Front Object Alarm Sensor Wiring Harness | T40 | • (-UKL) At right front of vehicle, behind fascia, approximately 17 cm (6.7 in) right of breakout to B174G Front View Driver Information Camera - Grille<br>• (UKL) At front of vehicle, left of center, behind fascia, approximately 66 cm (26 in) right of breakout to B306AB Front Parking Assist Alarm Outer Sensor - Left | •<br>• | — |
| J109 | Active Grille Air Shutter Harness | — | At the front of the vehicle, aeroshutter jumper wiring harness | — | — |
| J110 | Active Grille Air Shutter Wiring Harness | WMI | At the front of the vehicle, in active grille air shutter harness, attached to rear of the air shutter, near M96B Active Grille Air Shutter Actuator 2 | — | — |
| J111 | Aeroshutter Jumper Wiring Harness | WMI | At the front of the vehicle, aeroshutter jumper wiring harness | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J121 | Chassis Wiring Harness | G96 | In the engine compartment, left side, approximately 16.9 cm (6.7 in) below X400 | •<br>• | — |
| J122 | Chassis Wiring Harness | G96 | In the engine compartment, left side, approximately 30 cm (11.8 in) below X400 | •<br>• | — |
| J123 | Chassis Wiring Harness | G96 | In the engine compartment, left side, approximately 30 cm (11.8 in) below X400 | •<br>• | — |
| J126 | Body Wiring Harness | G96 | In the engine compartment, left rear, between breakout to K160 Brake System Control Module and bulkhead grommet | | — |
| J127 | Body Wiring Harness | G96 | In the engine compartment, left rear, between breakout to K160 Brake System Control Module and bulkhead grommet | | — |
| J128 | Body Wiring Harness | G96 | In the engine compartment, left rear, between breakout to K160 Brake System Control Module and bulkhead grommet | | — |
| J129 | Body Wiring Harness | — | In the engine compartment, left side, between breakout to G100 and G103, and breakout to G101A and G101B | | — |
| J130 | Engine Wiring Harness | LZ0 | In the engine compartment, left front, between breakout toward G176C and branch toward G13 Generator | | — |
| J131 | Engine Wiring Harness | LZ0 | In the engine compartment, left front, between breakout toward G176C and branch toward G13 Generator | | — |
| J132 | Body Wiring Harness | — | In the engine compartment, left rear, in breakout branch to M75 Windshield Wiper Motor and B20A Brake Fluid Level Indicator Switch, approximately 8 cm (3.1 in) from main branch | | — |
| J133 | Front Object Alarm Sensor Wiring Harness | — | • (-UKL) At right front of vehicle, behind fascia, approximately 12 cm (4.7 in) right of breakout to B174G Front View Driver Information Camera - Grille<br>• (UKL) At front of vehicle, left of center, behind fascia, approximately 29 cm (11.4 in) right of breakout to B306BB Front Parking Assist Alarm Sensor - Left Middle | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J141 | Front Object Alarm Sensor Wiring Harness | — | • (-UKL) At front of vehicle, right of center, behind fascia, approximately 32 cm (12.6 in) left of breakout to B174G Front View Driver Information Camera - Grille<br>• (UKL) At front of vehicle, near center, behind fascia, approximately 38 cm (15 in) left of breakout to B306CB Front Parking Assist Alarm Sensor - Right Middle | •<br>• | — |
| J149 | Engine Wiring Harness | LZ0 | In the engine compartment, left front, approximately 3 cm (1.2 in) rearward of breakout to X163 | | — |
| J150 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, left front, approximately 10 cm (3.9 in) below breakout to ground G177A and G177D<br>• (LZ0) In the engine compartment, left side, in harness channel, attached to the left side of the engine | •<br>• | — |
| J151 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel<br>• (LZ0) In the engine compartment, rear at top, in harness channel approximately 5 cm (2 in) right of breakout to Q18B Fuel Pressure Regulator 2 | •<br>• | — |
| J152 | Engine Wiring Harness | L84 / L87 | In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel | | — |
| J154 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel<br>• (LZ0) In the engine compartment, left front, in breakout to K20 Engine Control Module X1, approximately 11 cm (4.3 in) from main branch | •<br>• | — |
| J155 | Engine Wiring Harness | L84 / L87 | In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel | | — |
| J156 | Engine Wiring Harness | L84 / L87 | In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J158 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, front center, between breakout to Q38 Throttle Body and breakout to T8A Ignition Coil 1<br>• (LZ0) In the engine compartment, left front, approximately 11 cm (4.3 in) right of breakout branch toward X163 | •<br>• | — |
| J159 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, front center, between breakout to Q38 Throttle Body and breakout to T8A Ignition Coil 1<br>• (LZ0) In the engine compartment, left front, approximately 13 cm (5.1 in) right of breakout to K71 Transmission Control Module | •<br>• | — |
| J161 | Engine Wiring Harness | L84 / L87 | In the engine compartment, front center, between breakout to Q38 Throttle Body and breakout to T8A Ignition Coil 1 | | — |
| J164 | Engine Wiring Harness | L84 / L87 | In the engine compartment, rear of the engine, near the top, approximately 6 cm (2.4 in) rearward of breakout to ground G175 | | — |
| J165 | Engine Wiring Harness | L84 / L87 | In the engine compartment, rear of the engine, near the top, between breakout to ground G176A and harness channel at the left rear of the intake manifold | | — |
| J166 | Engine Wiring Harness | L84 / L87 | In the engine compartment, left rear, approximately 10 cm (3.9 in) above breakout to X160 | | — |
| J167 | Engine Wiring Harness | L84 / L87 | In the engine compartment rear center, in harness channel attached to the left rear of the intake manifold | | — |
| J168 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, left rear, approximately 10 cm below breakout to inline connectors X160 and X161<br>• (LZ0) In the engine compartment, left front, approximately 6 cm (2.4 in) right of breakout branch toward X163 | •<br>• | — |
| J169 | Engine Wiring Harness | LZ0 | In the engine compartment, left side, in harness channel, attached to the left side of the engine | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J170 | Engine Wiring Harness | LZ0 | In the engine compartment, left side, in harness channel, attached to the left side of the engine |  | — |
| J171 | Body Wiring Harness | — | In the engine compartment, right side, approximately 5 cm (2 in) forward of breakout branch toward X950 |  | — |
| J172 | Engine Wiring Harness | LZ0 | In the engine compartment, rear at top, in harness channel approximately 14 cm (5.5 in) right of breakout to Q18B Fuel Pressure Regulator 2 |  | — |
| J173 | Body Wiring Harness | — | In the engine compartment, right front, between breakout to X50A Engine Wiring Harness Junction Block X1 and breakout to X50A Engine Wiring Harness Junction Block X2 |  | — |
| J174 | Body Wiring Harness | — | In the engine compartment, front right side, in breakout branch towardP13 Horn, approximately 9 cm (3.5 in) from main branch |  | — |
| J175 | Body Wiring Harness | — | In the engine compartment, right rear, approximately 16 cm (6.3 in) rearward of breakout branch toward X50B Battery Distribution Engine Compartment Fuse Block |  | — |
| J177 | Body Wiring Harness | — | In the engine compartment, right rear, approximately 9 cm (3.5 in) rearward of breakout branch toward X50B Battery Distribution Engine Compartment Fuse Block |  | — |
| J178 | Front Object Alarm Sensor Wiring Harness | T40 | • (-UKL) At right front of vehicle, behind fascia, approximately 5 cm (2 in) below breakout to E2RF Front Side Marker Lamp - Right<br>• (UKL) At right front of vehicle, behind fascia, approximately 15 cm (5.9 in) below breakout to E2RF Front Side Marker Lamp - Right | •<br>• | — |
| J179 | Body Wiring Harness | — | In the engine compartment, right side, in breakout branch toward G102A and G102B, approximately 11 cm (4.3 in) from main branch |  | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J180 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, front center, between breakout to Q38 Throttle Body and breakout to T8A Ignition Coil 1<br>• (LZ0) In the engine compartment, left side, in harness channel, attached to the left side of the engine | •<br>• | — |
| J181 | Engine Wiring Harness | — | • (L84/L87) In the engine compartment, near breakout to B74 Manifold Absolute Pressure Sensor, in harness channel<br>• (LZ0) In the engine compartment, upper front, approximately 5 cm (2 in) left of breakout branch to X160 | •<br>• | — |
| J183 | Engine Wiring Harness | — | In the engine compartment, rear at top, in harness channel | | — |
| J184 | Engine Wiring Harness | NP0 / NQH | • (L84/L87) In the engine compartment, left rear of the engine, in breakout branch to K69 Transfer Case Control Module<br>• (LZ0) Under the vehicle, above rear of transmission, in breakout branch toward A16 Transfer Case Four Wheel Drive Actuator and B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor | •<br>• | — |
| J185 | Engine Wiring Harness | NP0 / NQH | • (L84/L87) In the engine compartment, left rear of the engine, in breakout branch to K69 Transfer Case Control Module<br>• (LZ0) In the engine compartment, left front of the engine, in breakout branch to K69 Transfer Case Control Module | •<br>• | — |
| J186 | Engine Wiring Harness | LZ0 | In the engine compartment, front center, in breakout branch towards Q20 Intake Airflow Control Valve, approximately 6 cm (2.4 in) from main branch | | — |
| J187 | Chassis Wiring Harness | - JJ1 | In the engine compartment, lower left side above molded channel. | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J188 | Engine Wiring Harness | NP0 / NQH | • (L84/L87) In the engine compartment, left rear of the engine, in breakout branch to K69 Transfer Case Control Module<br>• (LZ0) In the engine compartment, left front of the engine, in breakout branch to K69 Transfer Case Control Module | •<br>• | — |
| J189 | Engine Wiring Harness | NP0 / NQH | • (L84/L87) In the engine compartment, left rear of the engine, in breakout branch to K69 Transfer Case Control Module<br>• (LZ0) In the engine compartment, left front of the engine, in breakout branch to K69 Transfer Case Control Module | •<br>• | — |
| J190 | Automatic Transmission Wiring Harness | — | Under the vehicle, center, within T12 Automatic Transmission | — | — |
| J191 | Transmission Control Harness | — | Under the vehicle, center, within T12 Automatic Transmission | — | — |
| J192 | Transmission Case Harness | — | Under the vehicle, center, within T12 Automatic Transmission | — | — |
| J194 | Transmission Case Harness | — | Under the vehicle, center, within T12 Automatic Transmission | — | — |
| J195 | Transmission Case Harness | — | Under the vehicle, center, within T12 Automatic Transmission | — | — |
| J196 | Transmission Case Harness | — | Under the vehicle, center, within T12 Automatic Transmission | — | — |
| J197 | Engine Wiring Harness | NP0 / NQH | Under the vehicle, above rear of transmission, in breakout branch toward A16 Transfer Case Four Wheel Drive Actuator and B139 Transfer Case Two/ Four Wheel Drive Actuator Position Sensor | •<br>• | — |
| J198 | Engine Wiring Harness | NP0 / NQH | Under the vehicle, above rear of transmission, in breakout branch toward A16 Transfer Case Four Wheel Drive Actuator and B139 Transfer Case Two/ Four Wheel Drive Actuator Position Sensor | •<br>• | — |
| J201 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 4 cm (1.6 in) right of breakout to B107 Accelerator Pedal Position Sensor | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J202 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 10 cm (3.9 in) below breakouts to K219 Lighting Control Module |  | — |
| J203 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 19 cm (7.5 in) right of breakout to B107 Accelerator Pedal Position Sensor |  | — |
| J204 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 24 cm (9.4 in) right of breakout to B107 Accelerator Pedal Position Sensor |  | — |
| J205 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 30 cm (11.2) right of breakout to B107 Accelerator Pedal Position Sensor |  | — |
| J206 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 12 cm (4.7 in) left of breakout to the bulkhead grommet |  | — |
| J207 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 8 cm (3.1 in) left of breakout to the bulkhead grommet |  | — |
| J208 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 16 cm (6.3 in) left of breakout to the bulkhead grommet |  | — |
| J209 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 20 cm (7.9 in) left of breakout to the bulkhead grommet |  | — |
| J210 | Body Wiring Harness | — | In the passenger compartment, left side, near rear of driver door opening, approximately 16 cm (6.3 in) forward of breakout to cross vehicle branch |  | — |
| J211 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 4 cm (1.6 in) below breakouts to K9 Body Control Module |  | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J212 | Body Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 5 cm (3.9 in) below breakouts to K219 Lighting Control Module |  | — |
| J213 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right, within instrument panel, approximately 27 cm (10.6 in) left of breakout to X370A |  | — |
| J215 | Body Wiring Harness | — | In the passenger compartment, right front, within instrument panel, approximately 16 cm (6.3 in) left of breakout to grommet in bulkhead |  | — |
| J216 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right, within instrument panel, approximately 23 cm (9.1 in) left of breakout to X370A |  | — |
| J217 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 14 cm (5.5 in) left of breakout to P16 Instrument Panel Cluster Control Module |  | — |
| J219 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, front center, within instrument panel, approximately 24 cm (9.4 in) right of breakout to B107 Accelerator Pedal Position Sensor | — | — |
| J220 | Heater Wiring Harness | — | In the passenger compartment, right front, within instrument panel, in HVAC harness, approximately 18 cm (7.1 in) from X250 |  | — |
| J221 | Heater Wiring Harness | — | In the passenger compartment, right front, within instrument panel, in HVAC harness, approximately 24 cm (9.4 in) from breakout to M4P Programmable Air Inlet Valve Actuator |  | — |
| J222 | Heater Wiring Harness | — | In the passenger compartment, right front, within instrument panel, in HVAC harness, approximately 36 cm (14.2 in) from breakout to M4P Programmable Air Inlet Valve Actuator |  | — |
| J223 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left front, within instrument panel, approximately 14 cm (5.5 in) right of breakout to B107 Accelerator Pedal Position Sensor | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J225 | Steering Wheel Horn Switch Wiring Harness | — | In the steering wheel, in the steering wheel harness | — | — |
| J226 | Steering Wheel Horn Switch Wiring Harness | — | In the steering wheel, in the steering wheel harness | — | — |
| J233 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, within instrument panel, in breakout toward steering column switches, approximately 4 cm (1.6 in) from main branch | | — |
| J235 | Instrument Panel Wiring Harness | UQF | In the passenger compartment, left front, within instrument panel, approximately 15 cm (5.9 in) left of breakout to P16 Instrument Panel Cluster Control Module | | — |
| J236 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, within instrument panel, in breakout branch to X84 Data Link Connector, approximately 6 cm (2.4 in) from main branch | | — |
| J237 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, within instrument panel, approximately 11 cm (4.3 in) left of breakout to P16 Instrument Panel Cluster Control Module | | — |
| J238 | Instrument Panel Wiring Harness | UQF | In the passenger compartment, left front, within instrument panel, approximately 9 cm (3.5 in) left of breakout to P16 Instrument Panel Cluster Control Module | | — |
| J240 | Instrument Panel Wiring Harness | — | In the passenger compartment, left front, in breakout branch toward K9 Body Control Module, approximately 12 cm (4.7 in) from main branch | | — |
| J241 | Instrument Panel Wiring Harness | — | In the passenger compartment, front center, within instrument panel, between breakout to S38 On/Off Vehicle Switch and breakout to E8VA Front Floor Courtesy Lamp - Left | | — |
| J242 | Instrument Panel Wiring Harness | — | In the passenger compartment, left of center, within instrument panel, approximately 10 cm (3.9 in) right of breakout to K60 Column Lock Module | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J243 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right of center, within instrument panel, in breakout to inline connector X370A, approximately 15 cm (5.9 in) from main harness | | — |
| J244 | Instrument Panel Wiring Harness | — | In the passenger compartment, right of center, within instrument panel, approximately 11 cm (4.3 in) left of breakout to X370A | | — |
| J246 | Instrument Panel Wiring Harness | — | In the passenger compartment, left of center, within instrument panel, approximately 2 cm (.8 in) right of breakout to K60 Column Lock Module | | — |
| J247 | Instrument Panel Wiring Harness | — | In the passenger compartment, front center, within instrument panel, right of center, between breakout to X51R Fuse Block - Instrument Panel - Right X3 and breakout to inline connectors X225B and X2225C | | — |
| J248 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right, within instrument panel, approximately 15 cm (5.9 in) right of breakout to B10D Sun Load and Ambient Light Security Indicator Sensor | | — |
| J249 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right, within instrument panel, approximately 11 cm (4.3 in) right of breakout to B10D Sun Load and Ambient Light Security Indicator Sensor | | — |
| J250 | Instrument Panel Wiring Harness | — | In the passenger compartment, right of center, within instrument panel, approximately 15 cm (5.9 in) left of breakout to X370A | | — |
| J251 | Instrument Panel Wiring Harness | UQF | In the passenger compartment, front right, within instrument panel, approximately 19 cm (7.5 in) left of breakout to X370A | | — |
| J252 | Instrument Panel Wiring Harness | UQF | In the passenger compartment, front right, within instrument panel, approximately 30 cm (11.8 in) left of breakout to X370A | | — |
| J253 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right, within instrument panel, approximately 30 cm (11.8 in) left of breakout to X370A | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J254 | Instrument Panel Wiring Harness | — | In the passenger compartment, front right, within instrument panel, in breakout to X51R Instrument Panel Wiring Harness Junction Block - Right X2, approximately 15 cm (5.9 in) from main branch | | — |
| J263 | Body Wiring Harness | — | In the passenger compartment, right front, within instrument panel, approximately 29 cm (11.4 in) left of breakout to grommet in bulkhead | | — |
| J265 | Body Wiring Harness | — | In the passenger compartment, right front, within instrument panel, approximately 57 cm (22 in) left of breakout to grommet in bulkhead | | — |
| J267 | Instrument Panel Wiring Harness | — | In the passenger compartment, left of center, within instrument panel, approximately 6 cm (2.4 in) left of breakout to K60 Column Lock Module | | — |
| J268 | Body Wiring Harness | — | In the passenger compartment, right front, within instrument panel, approximately 51 cm (20 in) left of breakout to grommet in bulkhead | | — |
| J300 | Front Floor Console Wiring Harness | — | • (AZ3) In the passenger compartment, front center, beneath front center seat, between breakouts for X225A and A34 Heater and Air Conditioning Auxiliary Control<br>• (DCH) In the passenger compartment, front center, beneath floor console, right rear side, approximately 4 cm (1.6 in) forward of breakout branch toward X225A<br>• (D07) In the passenger compartment, front center, beneath floor console, right rear side, approximately 5 cm (2 in) rearward of breakout branch toward X225A<br>• (DCK) In the passenger compartment, front center, beneath floor console, right rear side, approximately 5 cm (2 in) rearward of breakout branch toward X225A | •<br>•<br>•<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J301 | Front Floor Console Wiring Harness | — | • (AZ3) In the passenger compartment, front center, beneath front center seat, between breakouts for X225A and A34 Heater and Air Conditioning Auxiliary Control<br>• (D07) In the passenger compartment, front center, beneath floor console, right rear side, approximately 33 cm (13 in) Rearward of breakout branch toward X225A<br>• (DCH) In the passenger compartment, front center, beneath floor console, right rear side, approximately 18 cm (7.1 in) forward of breakout to K230 Front Floor Console Control Module<br>• (DCK) In the passenger compartment, front center, beneath floor console, right rear side, approximately 38 cm (15 in) rearward of breakout branch toward X225A | •<br>•<br>•<br>• | — |
| J302 | Front Floor Console Wiring Harness | D07 / DCH / DCK | • (DCH) In the passenger compartment, front center, beneath floor console, right rear side, approximately 4 cm (1.6 in) rearward of breakout branch toward X225A<br>• (D07) In the passenger compartment, front center, beneath floor console, right rear side, approximately 8 cm (3.1 in) Rearward of breakout branch toward X225A<br>• (DCK) In the passenger compartment, front center, beneath floor console, right rear side, approximately 5 cm (2 in) forward of breakout branch toward X225A | •<br>•<br>• | — |
| J303 | Front Floor Console Wiring Harness | D07 / DCK | • (D07) In the passenger compartment, front center, beneath floor console, right rear side, approximately 16 cm (6.3 in) Rearward of breakout branch toward X225A<br>• (DCK) In the passenger compartment, front center, beneath floor console, right rear side, approximately 21 cm (8.3 in) rearward of breakout branch toward X225A | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J304 | Auxiliary Heater and Air Conditioning Wiring Harness | — | In the cargo area, right rear, behind right quarter lower rear trim panel, within Auxiliary HVAC harness | — | — |
| J305 | Front Seat Wiring Harness - Driver | UW9 | In passenger compartment, below driver seat, near right side center, between breakouts for E14A Front Seat Back Heater - Driver and F106DA Front Seat Inboard Seat Back Airbag - Driver | | — |
| J306 | Front Seat Wiring Harness - Driver | UW9 | In passenger compartment, in driver seat back, in breakout branch to P22E Video Display - Left Front Seat Back | | — |
| J307 | Front Seat Wiring Harness - Passenger | UW9 | In passenger compartment, in passenger seat back, in breakout branch to P22F Video Display - Right Front Seat Back | | — |
| J308 | Auxiliary Heater and Air Conditioning Wiring Harness | — | In the cargo area, right rear, behind right quarter lower rear trim panel, within Auxiliary HVAC harness | — | — |
| J309 | Auxiliary Heater and Air Conditioning Wiring Harness | — | In the cargo area, right rear, behind right quarter lower rear trim panel, within Auxiliary HVAC harness | — | — |
| J310 | Front Seat Wiring Harness - Driver | A45 / AUN | In passenger compartment, below driver seat, near center, between breakouts for M50D Front Seat Tilt Adjuster Actuator - Driver and K40D Driver Seat Adjuster Memory Module | | — |
| J311 | Front Seat Wiring Harness - Driver | AL9 | In passenger compartment, below driver seat, near left side center, between breakouts for M55D Front Seat Vertical Adjuster Actuator - Driver and P45L Front Seat Lane Departure Warning Actuator - Left | | — |
| J313 | Front Seat Wiring Harness - Passenger | — | In passenger compartment, below passenger seat, near right side center, between breakouts for M50P Front Seat Tilt Adjuster Actuator - Passenger and G31P Front Seat Back Lumbar Pump - Passenger (AVU) or M53P Front Seat Back Lumbar Motor - Passenger (AT9) | | — |
| J314 | Front Seat Wiring Harness - Passenger | UW9 | In passenger compartment, in passenger seat back, in breakout branch to P22F Video Display - Right Front Seat Back | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J315 | Front Seat Wiring Harness - Driver | KQV | In passenger compartment, below driver seat, near center, between breakouts for P45R Front Seat Lane Departure Warning Actuator – Right and K40D Driver Seat Adjuster Memory Module | | — |
| J316 | Front Seat Wiring Harness - Driver | AVK | In passenger compartment, below driver seat, near right side center, between breakouts for P45R Front Seat Lane Departure Warning Actuator – Right and K40D Driver Seat Adjuster Memory Module | | — |
| J317 | Front Seat Wiring Harness - Driver | — | In passenger compartment, below driver seat, near left side center, between breakouts for M55D Front Seat Vertical Adjuster Actuator - Driver and P45L Front Seat Lane Departure Warning Actuator - Left | | — |
| J318 | Headlining Trim Panel Harness | — | Above the headliner, front, left of center, between breakout branches for X370B and E31L Sunshade Mirror Lamp - Left | •<br>• | — |
| J319 | Front Seat Wiring Harness - Driver | KQV | In passenger compartment, below driver seat, near left side center, between breakouts for M55D Front Seat Vertical Adjuster Actuator - Driver and P45L Front Seat Lane Departure Warning Actuator - Left | | — |
| J320 | Front Floor Console Wiring Harness | — | • (D07) In the passenger compartment, front center, beneath floor console, right rear side, approximately 42 cm (16.3 in) rearward of breakout branch toward X225A<br>• (DCH) In the passenger compartment, front center, beneath floor console, right rear side, approximately 7 cm (2.8 in) rearward of breakout to K230 Front Floor Console Control Module<br>• (DCK) In the passenger compartment, front center, beneath floor console, right rear side, approximately 52 cm (20.5 in) rearward of breakout branch toward X225A | •<br>•<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J321 | Front Seat Wiring Harness - Passenger | — | In passenger compartment, below passenger seat, near right side center, between breakouts for M55P Front Seat Vertical Adjuster Actuator - Passenger and M50P Front Seat Tilt Adjuster Actuator - Passenger | | — |
| J323 | Door Sill Plate Lamp Accessory Wiring Harness | S0M | In the Door Sill Plate Lamp Accessory Wiring Harness. | — | — |
| J324 | Front Seat Wiring Harness - Passenger | KA1 | In the pas In passenger compartment, below passenger seat, near center, between breakouts for X333 and E14D Front Seat Cushion Heater - Passenger compartment | | — |
| J325 | Front Seat Wiring Harness - Passenger | KQV | In passenger compartment, below passenger seat, near center, between breakouts for B88P Seat Belt Switch - Passenger and K85P Restraints Occupant Classification System Module - Passenger | | — |
| J326 | Front Seat Wiring Harness - Passenger | KA1 | In passenger compartment, below driver seat, near center, between breakouts for M50D Front Seat Tilt Adjuster Actuator - Driver and K40D Driver Seat Adjuster Memory Module | | — |
| J327 | Door Sill Plate Lamp Accessory Wiring Harness | S0M | In the Door Sill Plate Lamp Accessory Wiring Harness. | — | — |
| J328 | Door Sill Plate Lamp Accessory Wiring Harness | S0M | In the Door Sill Plate Lamp Accessory Wiring Harness. | — | — |
| J329 | Body Wiring Harness | — | In the passenger compartment, left middle, in harness channel near left B-pillar, approximately 10 cm (3.9 in) rearward of breakout to cross vehicle branch | | — |
| J330 | Front Seat Wiring Harness - Driver | KA1 | In passenger compartment, below driver seat, near right side center, between breakouts for E14B Front Seat Cushion Heater - Driver and P45R Front Seat Lane Departure Warning Actuator - Right | | — |
| J331 | Body Wiring Harness | — | In the passenger compartment, front center, beneath driver seat, approximately 10 cm (3.9 in) right of breakout to G303 | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J332 | Front Seat Wiring Harness - Passenger | KQV | In passenger compartment, below passenger seat, near center, between breakouts for B88P Seat Belt Switch - Passenger and K85P Restraints Occupant Classification System Module - Passenger |  | — |
| J333 | Body Wiring Harness | — | In the passenger compartment, front center, beneath floor console, approximately 5 cm (2 in) left of breakout to K36 Restraints Control Module X1 |  | — |
| J334 | Body Wiring Harness | — | In the passenger compartment, front center, beneath floor console, approximately 15 cm (5.9 in) left of breakout to K36 Restraints Control Module X1 |  | — |
| J335 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left rear, approximately 54 cm (21.2 in) from breakout to F112D Front Seat Belt Retractor - Driver, towards the rear of the vehicle | — | — |
| J336 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, front center, beneath floor console, approximately 26 cm (10.2 in) right of breakout to G303 | — | — |
| J337 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, front center, beneath floor console, between breakout to K36 Restraints Control Module connector X2 and breakout to W12FC Blunt Cut - Front Set/Center Console | — | — |
| J338 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left front, in harness channel near left B-pillar, between breakout towards cross vehicle branch and breakout to ground G301 | — | — |
| J339 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left front, in harness channel near left B-pillar, between breakout towards cross vehicle branch and breakout to ground G301 | — | — |
| J340 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left front, in harness channel near left B-pillar, between breakout towards cross vehicle branch and breakout to ground G301 | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J341 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, between breakout to ground G301 and breakout to F113D Front Seat Belt Anchor Plate Tensioner - Driver | — | — |
| J342 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, between breakout to ground G301 and breakout to F113D Front Seat Belt Anchor Plate Tensioner - Driver | — | — |
| J343 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, between breakout to ground G301 and breakout to F113D Front Seat Belt Anchor Plate Tensioner - Driver | — | — |
| J344 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, between breakout to F113D Front Seat Belt Anchor Plate Tensioner - Driver and breakout to F112D Front Seat Belt Retractor - Driver | — | — |
| J345 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, between breakout to F113D Front Seat Belt Anchor Plate Tensioner - Driver and breakout to F112D Front Seat Belt Retractor - Driver | — | — |
| J346 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, between breakout to F113D Front Seat Belt Anchor Plate Tensioner - Driver and breakout to F112D Front Seat Belt Retractor - Driver | — | — |
| J347 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, approximately 4 cm (1.6 in) from breakout to F112D Front Seat Belt Retractor - Driver, towards the rear of the vehicle | — | — |
| J348 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, approximately 7 cm (2.8 in) from breakout to F112D Front Seat Belt Retractor - Driver, towards the rear of the vehicle | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J349 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, approximately 10 cm (3.9 in) from breakout to F112D Front Seat Belt Retractor - Driver, towards the rear of the vehicle | — | — |
| J350 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, approximately 14 cm (5.5 in) from breakout to F112D Front Seat Belt Retractor - Driver, towards the rear of the vehicle | — | — |
| J352 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, left side, near base of B pillar, approximately 17 cm (6.7 in) from breakout to F112D Front Seat Belt Retractor - Driver, towards the rear of the vehicle | — | — |
| J357 | Body Wiring Harness | — | • (-(5W4/9C1)) In the passenger compartment, front center, beneath floor console, approximately 15 cm (5.9 in) right of breakout to K36 Restraints Control Module<br>• (5W4/9C1) In the passenger compartment, front center, beneath floor console, approximately 5 cm (2 in) right of breakout to W12FC Blunt Cut - Front Set/ Center Console | | — |
| J358 | Body Wiring Harness | UW9 | In the passenger compartment, front center, beneath floor console, approximately 5 cm (2 in) left of X226 | | — |
| J361 | Body Wiring Harness | — | • (-AZ3) In the passenger compartment, front right, below passenger seat, approximately 10 cm (3.9 in) left of breakout to X225A<br>• (AZ3) In the passenger compartment, front right, below passenger seat, approximately 10 cm (3.9 in) left of breakout to X225D | | — |
| J362 | Body Wiring Harness | — | In passenger compartment, right side, near base of B pillar, approximately 5 cm (2 in) rearward of breakout to X800 | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J365 | 2nd Row Seat Wiring Harness - Left Cushion | — | In the passenger compartment, in left 2nd row seat cushion, between breakouts for M107LR Folding Rear Seat Back Actuator - Left and E14F Rear Seat Cushion Heater - Left Rear | •<br>• | — |
| J367 | 2nd Row Seat Wiring Harness - Right Cushion | — | In the passenger compartment, in right 2nd row seat cushion, between breakouts for K29R Rear Seat Heater Control Module and E14H Rear Seat Cushion Heater - Right Rear | •<br>• | — |
| J369 | Body Wiring Harness | — | • (-(5W4/9C1)) In the passenger compartment, front right, below passenger seat, approximately 10 cm (3.9 in) left of breakout to X225A<br>• (5W4/9C1) In the passenger compartment, front right, approximately 5 cm (2 in) forward of breakout to cross vehicle branch | | — |
| J371 | Chassis Wiring Harness | — | Underneath the vehicle, right side, approximately 23 cm (9.1 in) rearward of breakout to G402 | •<br>• | — |
| J372 | Chassis Wiring Harness | — | Under the vehicle, right side, between breakout to B5RF Front Wheel Speed Sensor - Right and breakout to ground G402 | •<br>• | — |
| J373 | Chassis Wiring Harness | LZ0 | Underneath the vehicle, right middle, approximately 17 cm (6.7 in) forward of breakout to M122 Exhaust Pressure Regulator Valve | •<br>• | — |
| J374 | Chassis Wiring Harness | LZ0 | Underneath the vehicle, right middle, approximately 17 cm (6.7 in) forward of breakout to M122 Exhaust Pressure Regulator Valve | •<br>• | — |
| J377 | Chassis Wiring Harness | LZ0 | • (SWB) Underneath the vehicle, right side, approximately 42 cm (16.5 in) rearward of breakout to G402<br>• (LWB) Underneath the vehicle, right side, approximately 10 cm (3.9 in) rearward of breakout to G402 | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J378 | Chassis Wiring Harness | LZ0 | • (SWB) Under the vehicle, right side, between breakout to B5RF Front Wheel Speed Sensor - Right and breakout to X50A Engine Wiring Harness Junction Block X4<br>• (LWB) Underneath the vehicle, right side, approximately 42 cm (16.5 in) rearward of breakout to G402 | •<br>• | — |
| J379 | Chassis Wiring Harness | — | • (SWB) Underneath the vehicle, right side, approximately 12 cm (4.7 in) rearward of breakout to G402<br>• (LWB) Underneath the vehicle, right side, approximately 35 cm (13.8 in) rearward of breakout to G402 | •<br>• | — |
| J380 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, front center, beneath floor console, between breakout to K36 Restraints Control Module connectors X1 and X2 | — | — |
| J381 | Headlining Trim Panel Harness | — | In the passenger compartment, front right, above headliner, approximately 10 cm (3.9 in) left of breakout to E31R Sunshade Mirror Lamp - Right | •<br>• | — |
| J382 | Headlining Trim Panel Harness | C3U | In the passenger compartment, right of center, above headliner, approximately 27 cm (10.6 in) left of breakout to E31R Sunshade Mirror Lamp - Right | | — |
| J383 | Headlining Trim Panel Harness | — | In the passenger compartment, front right, above headliner, approximately 12 cm (4.7 in) right of breakout to E31R Sunshade Mirror Lamp - Right | •<br>• | — |
| J384 | Sunroof Wiring Harness | C3U | In the passenger compartment, above headliner, approximately 24 cm (9.4 in) right of breakout to M81 Sunroof Sunshade Motor | | — |
| J385 | Sunroof Wiring Harness | C3U | In the passenger compartment, above headliner, approximately 33 cm (13 in) right of breakout to M81 Sunroof Sunshade Motor | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J386 | Front Floor Console Wiring Harness | BOR / BOY | • (D07) In the passenger compartment, front center, beneath floor console, right rear side, approximately 8 cm (3.1 in) above breakout branch toward X225A<br>• (DCH) In the passenger compartment, front center, beneath floor console, right rear side, approximately 4 cm (1.6 in) forward of breakout branch toward X225A<br>• (DCK) In the passenger compartment, front center, beneath floor console, right rear side, approximately 4 cm (1.6 in) forward of S145 Beverage Cooler Switch | •<br>•<br>• | — |
| J387 | Chassis Wiring Harness | — | • (SWB) Underneath the vehicle, right side, approximately 52 cm (20.5 in) rearward of breakout to G402<br>• (LWB) Underneath the vehicle, middle of right side , approximately 24 cm (9.4 in) forward of breakout branch to B5RR Rear Wheel Speed Sensor - Right | •<br>• | — |
| J390 | Body Wiring Harness | — | In the passenger compartment, front right, below passenger seat, approximately 5 cm (2 in) left of breakout to G302 |  | — |
| J392 | Body Wiring Harness | — | • (SWB-(5W4/9C1)) In the luggage compartment, right front, approximately 48 (19 in) cm forward of breakout to X92BCR USB Receptacle - 3rd Row Seat Right, towards the rear of the vehicle<br>• (LWB-(5W4/9C1)) In the luggage compartment, right front, approximately 12 cm (4.7 in) rearward of breakout to S143R Rear Seat Back Folding Switch - 2nd Row Right<br>• (5W4/9C1) In passenger compartment, right front, near base of A-pillar, approximately 2.5 cm (1 in) below breakout to X51R Instrument Panel Wiring Harness Junction Block - Right | •<br>• | — |
| J393 | Body Wiring Harness | 5W4 / 9C1 | In the passenger compartment, front right, approximately 5 cm (2 in) rearward of breakout to X251P | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J402 | Body Wiring Harness | — | • (SWB) In the luggage compartment, right front, approximately 23 cm (9.1 in) cm forward of breakout to X92BCR USB Receptacle - 3rd Row Seat Right, towards the rear of the vehicle<br>• (LWB) In the luggage compartment, right front, approximately 31cm (12.2 in) cm rearward of breakout to S143R Rear Seat Back Folding Switch - 2nd Row Right | •<br>• | — |
| J403 | Body Wiring Harness | — | In the luggage compartment, left side, near back of right rear door opening approximately, 5 cm (2 in) rearward of breakout to T10E Low Frequency Rear Compartment Antenna | •<br>• | — |
| J404 | Body Wiring Harness | — | • (SWB) In the luggage compartment, left side, approximately 12 cm (4.7 in) rearward of breakout to K77 Remote Function Actuator Module<br>• (LWB) In the luggage compartment, left side, approximately 9 cm (3.5 in) forward of breakout branch to E42L Rear Body Structure Stop Lamp - Left | •<br>• | — |
| J410 | Body Wiring Harness | — | In the luggage compartment, left rear, approximately 34 cm (13.4 in) right of breakout to F105L Front and Rear Row Roof Rail Airbag - Left |  | — |
| J415 | Body Wiring Harness | 5W4 / 9C1 | In the luggage compartment, left side, approximately 8.7 cm (3.4 in) rearward of breakout to K77 Remote Function Actuator Module | — | — |
| J416 | Body Wiring Harness | 5W4 / 9C1 | In the luggage compartment, left side, approximately 12.7 cm (5 in) rearward of breakout to K77 Remote Function Actuator Module | — | — |
| J417 | Body Wiring Harness | 5W4 / 9C1 | In the luggage compartment, left side, approximately 4.1 cm (1.6 in) rearward of breakout to X92BCL USB Receptacle - 3rd Row Seat Left | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J425 | Rear Object Alarm Sensor Wiring Harness | — | At rear of vehicle, right of center, behind rear fascia, below liftgate, approximately 18 cm (7.1 in) right of breakout branch toward right rear park assist sensors | | — |
| J426 | Body Wiring Harness | — | • (SWB) In the luggage compartment, right front, approximately 34 cm (13.4 in) cm forward of breakout to X92BCR USB Receptacle - 3rd Row Seat Right, towards the rear of the vehicle<br>• (LWB) In the luggage compartment, right rear, below window, between breakouts for X92BCR USB Receptacle - 3rd Row Seat Right and X251 | •<br>• | — |
| J427 | Rear Object Alarm Sensor Wiring Harness | — | At rear of vehicle, right of center, behind rear fascia, below liftgate, approximately 9 cm (3.5 in) right of breakout branch toward right rear park assist sensors | | — |
| J428 | Rear Object Alarm Sensor Wiring Harness | — | At rear of vehicle, left of center behind rear fascia, below liftgate, approximately 5 cm (2 in) right of breakout branch toward left rear park assist sensors | | — |
| J429 | Rear Object Alarm Sensor Wiring Harness | — | At rear of vehicle, left side, behind rear fascia, below liftgate, approximately 14 cm (5.1 in) left of breakout branch toward left rear park assist sensors | | — |
| J430 | Body Wiring Harness | — | In the luggage compartment, right rear, below window, between breakouts for X92BCR USB Receptacle - 3rd Row Seat Right and X251 | •<br>• | — |
| J431 | Rear Object Alarm Sensor Wiring Harness | — | At rear of vehicle, near center, behind rear fascia, below liftgate, approximately15 cm (5.9 in) left of breakout to T10G Low Frequency Rear Bumper Antenna | | — |
| J432 | Body Wiring Harness | 5W4 / 9C1 | In the luggage compartment, right rear, approximately 44 cm (17.3 in ) forward of breakout to X92BCR USB Receptacle - 3rd Row Seat Right | — | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J435 | Body Wiring Harness | 5W4 / 9C1 | In the luggage compartment, right rear, approximately 99 cm (39 in ) rearward of breakout to B63RR Airbag Side Impact Rear Sensor - Right Door | — | — |
| J436 | Body Wiring Harness | UKL | In the luggage compartment, right rear, right of liftgate opening, approximately 10 cm (3.9 in) cm left of breakout towards G408A and G408B | •<br>• | — |
| J441 | 3rd Row Seat Wiring Harness | AS8 | In passenger compartment, rear, beneath left side of 3rd row seat cushion, approximately 6 cm (2.4 in) right of breakouts to K169 Folding 3rd Row Seat Module | | — |
| J442 | Rear Object Alarm Sensor Wiring Harness | — | At rear of vehicle, left of center behind rear fascia, below liftgate, approximately 11 cm (4.3 in) left of breakout branch toward left rear park assist sensors | | — |
| J443 | Body Wiring Harness | — | • (SWB / (5W4 / 9C1)) In the luggage compartment, right rear, below window, between breakouts for X92BCR USB Receptacle - 3rd Row Seat Right and X251<br>• (LWB) In the luggage compartment, right front, approximately 12 cm (4.7 in) cm forward of breakout to S143R Rear Seat Back Folding Switch - 2nd Row Right | •<br>• | — |
| J450 | Chassis Wiring Harness | — | Under the vehicle, right rear, approximately 5 cm (2 in) rearward from breakout to G404 | •<br>• | — |
| J451 | Chassis Wiring Harness | — | Under the vehicle, right rear, between breakout to G404 and G407 | •<br>• | — |
| J454 | Chassis Wiring Harness | — | Under the vehicle, right rear, approximately 20 cm (7.9 in) rearward from breakout to G407 | •<br>• | — |
| J455 | Chassis Wiring Harness | JL1 | Under the vehicle, right rear, approximately 29 cm (11.4 in) rearward from breakout to G407 | •<br>• | — |
| J460 | Body Wiring Harness | — | In the luggage compartment, left rear, approximately 6 cm (2.4 in) left of breakout to F105L Front and Rear Row Roof Rail Airbag - Left | | — |
| J461 | Body Wiring Harness | G96 | Under the vehicle, left rear, behind fuel tank, in breakout branch to X415R | •<br>• | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J462 | Body Wiring Harness | G96 | Under the vehicle, left rear, between breakouts to G405A and X415R | •<br>• | — |
| J463 | Body Wiring Harness | G96 | Under the vehicle, left rear, between breakouts to G405A and X415R | •<br>• | — |
| J466 | 3rd Row Seat Wiring Harness | UH6 | In passenger compartment, rear, behind center of 3rd row seat cushion, approximately 10 cm (3.9 in) forward of X346 |  | — |
| J491 | Differential Carrier Lock Wiring Harness | G96 | Under the vehicle, left rear, between X415R and M135 Differential Lock Motor connectors |  | — |
| J500 | Front Side Door Door Wiring Harness - Driver | — | Left side of the vehicle, within driver door, in harness channel at the front of the door |  | — |
| J502 | Front Side Door Door Wiring Harness - Driver | — | Left side of the vehicle, within driver door, near center, between breakouts for M74D Front Side Door Window Regulator Motor - Driver and B63LF Airbag Side Impact Sensor - Left Front Door |  | — |
| J505 | Front Side Door Door Lock Door Wiring Harness - Driver | — | left side of the vehicle, in breakout branch toward S13D Door Lock Switch - Driver, approximately 5 cm (2 in) from main branch |  | — |
| J507 | Front Side Door Door Lock Door Wiring Harness - Driver | — | Left side of the vehicle, within driver door, approximately 8 cm (3.1 in) rearward of breakout to E55LF Front Side Door Map Pocket Illumination Lamp - Left |  | — |
| J510 | Front Side Door Door Wiring Harness - Driver | — | Left side of the vehicle, within driver door, near center, between breakouts for M74D Front Side Door Window Regulator Motor - Driver and B63LF Airbag Side Impact Sensor - Left Front Door |  | — |
| J601 | Front Side Door Door Wiring Harness - Passenger | — | Right side of the vehicle, within passenger door, near center, between breakouts for M74P Front Side Door Window Regulator Motor - Passenger and B63RF Airbag Side Impact Sensor - Right Front Door |  | — |
| J605 | Front Side Door Door Lock Door Wiring Harness - Passenger | — | Right side of the vehicle, within the passenger door, in breakout branch toward S13P Door Lock Switch - Passenger, approximately 5 cm (2 in) from main branch |  | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J606 | Front Side Door Door Lock Door Wiring Harness - Passenger | — | Right side of the vehicle, within the passenger door, in breakout to S79P Front Side Door Window Switch - Passenger | | — |
| J609 | Front Side Door Door Wiring Harness - Passenger | — | Right side of the vehicle, within right front door, in harness channel at the front of the door | | — |
| J702 | Rear Side Door Door Wiring Harness - Left | — | Left side of the vehicle, within left rear door, near front, between X700 and breakout to X705 | •<br>• | — |
| J705 | Rear Side Door Door Lock Door Wiring Harness - Left | — | Left side of the vehicle, within left rear door, in breakout to E55LR Rear Side Door Pocket Illumination Lamp - Left | | — |
| J706 | Rear Side Door Door Lock Door Wiring Harness - Left | — | Left side of the vehicle, within left rear door, in breakout to E55LR Rear Side Door Pocket Illumination Lamp - Left | | — |
| J800 | Rear Side Door Door Wiring Harness - Right | — | Right side of the vehicle, within right rear door, near front, between breakouts to X800 and X805 | •<br>• | — |
| J805 | Rear Side Door Door Lock Door Wiring Harness - Right | — | Right side of the vehicle, within right rear door, in breakout branch to E55RR Rear Side Door Pocket Illumination Lamp - Right | | — |
| J806 | Rear Side Door Door Lock Door Wiring Harness - Right | — | Right side of the vehicle, within right rear door, in breakout branch to E55RR Rear Side Door Pocket Illumination Lamp - Right | | — |
| J901 | Liftgate Wiring Harness | — | At the rear of the vehicle, within the liftgate, left upper, approximately 16 cm (6.3 in) below breakout to E18 Rear Window Defogger Grid X2 | | — |
| J902 | Liftgate Wiring Harness | 5W4 / 9C1 | At the rear of the vehicle, within the liftgate, left upper, approximately 23 cm (9.1 in) below breakout to E18 Rear Window Defogger Grid X2 | | — |
| J903 | Liftgate Wiring Harness | 5W4 / 9C1 | At the rear of the vehicle, within the liftgate, left upper, approximately 43 cm (16.9 in) below breakout to E18 Rear Window Defogger Grid X2 | | — |
| J904 | Liftgate Wiring Harness | — | At the rear of the vehicle, within the liftgate, left upper, approximately 12 cm (4.7 in) below breakout to E18 Rear Window Defogger Grid X2 | | — |

| Code | Name | Option | Location | Locator View | Connector End View |
|---|---|---|---|---|---|
| J911 | Rear License Plate Lamp Wiring Harness | — | At the rear of the vehicle, behind rear closure center applique, near center, approximately 11 cm (4.3 in) left of breakout toward E7R Rear License Plate Lamp - Right | | — |
| J934 | Rear License Plate Lamp Wiring Harness | — | At the rear of the vehicle, within the liftgate, near center, approximately 3 cm (1.2 in) forward of grommet to rear closure center applique | | — |

# Description and Operation

## Power Mode Description and Operation

### Serial Data Power Mode Master

The K9 Body Control Module (BCM) is the Power Mode Master and the K56 Serial Data Gateway Module is the Back-Up Power Mode Master.

The Power Mode Master uses various vehicle status conditions and inputs to determine the desired vehicle power mode state. The Power Mode (Off, Accessory, Run, Propulsion, Start) is communicated to other modules via Serial Data and other electrical signals in order to provide the proper feature operation for the appropriate power mode.

If the Power Mode Master cannot control or determine the correct Power Mode, the Backup Power Mode Master will take over and become the vehicle Power Mode Master and place the vehicle into the proper Power Mode by communicating with other modules via Serial Data to provide the proper electrical signals to provide the proper feature operation for the appropriate power mode.

### S38 On/Off Vehicle Switch

There are 5 power modes to convey driver intent:

- OFF – A low power mode that allows maximum stand time until next start
- ACCY – Allows use of certain features that require operator authorization (Power windows for example). Propulsion is specifically disallowed.
- RUN – All features enabled except propulsion (motive force)
- PROPULSION – All features enabled
- START - This will transition to PROPULSION, including turning off non-essential loads to provide additional power for starting.

**Power Mode States**

| Customer Action | Expected Vehicle Power Mode | S38 Vehicle On/Off Switch BCM Scan Tool Parameter | S38 Vehicle On/Off Switch Voltages |
|---|---|---|---|
| Vehicle OFF, S38 On/Off Vehicle Switch not pressed, Transmitter in Range | Vehicle Off Mode | Inactive | 1.4 – 3.0 V (Switch Pressed)<br>3.35 – 4.26 V (Switch Released)<br>4.5 — 5.0 V (Switch Disconnected) |
| Vehicle OFF, S38 On/Off Vehicle Switch not pressed, Transmitter out of Range/Away from vehicle | Vehicle Off Mode | Inactive | |
| Vehicle in any Power Mode EXCEPT OFF, then Press the S38 On/Off Vehicle Switch Foot On or Off the Brake Pedal, Transmitter in Vehicle | Vehicle Off Mode | Active (pushed) / Inactive (not pushed) | |
| Vehicle in Propulsion Mode, momentarily Press and Release the S38 On/Off Vehicle Switch Foot On or Off the Brake Pedal, Transmitter out of Range/Away from vehicle | Run Mode, With DIC Message No Remote Detected Press Brake to Restart | Active (pushed) Inactive (not pushed) | |

| Customer Action | Expected Vehicle Power Mode | S38 Vehicle On/Off Switch BCM Scan Tool Parameter | S38 Vehicle On/Off Switch Voltages |
|---|---|---|---|
| Vehicle Off Power Mode, then Press the S38 On/Off Vehicle Switch for less than 5 s with foot Off the Brake Pedal; Transmitter in Vehicle | Vehicle Accessory Mode | Active (pushed) / Inactive (not pushed) | |
| Vehicle Off Power Mode, then S38 On/Off Vehicle Switch with foot On the Brake Pedal; Transmitter in Vehicle | Vehicle Start/Propulsion Mode (vehicle cranks then engine running (for Internal Combustion Engine) or Propulsion System Active for EV) power mode timeout is enabled | Active (pushed) / Inactive (not pushed) | |
| Vehicle Off Power Mode, then S38 On/Off Vehicle Switch with foot On the Brake Pedal for 5 to 10 s; Transmitter in Vehicle | Vehicle Start/Propulsion Mode (vehicle cranks then Propulsion Mode Active) power mode timeout will be disabled. | Active (pushed) / Inactive (not pushed) | |
| Vehicle OFF Power Mode, then Press and Hold the S38 On/Off Vehicle Switch for 5 s with foot Off the Brake Pedal; Transmitter in Vehicle | Vehicle Run Mode (Ignition ON without the Propulsion system Active) | Active (pushed) / Inactive (not pushed) | |
| Vehicle OFF Power Mode, then Press and Hold the S38 On/Off Vehicle Switch for 5 s with foot Off the Brake Pedal; Transmitter in Vehicle | Vehicle Start/Propulsion Mode (vehicle cranks then Propulsion Active) power mode timeout is disabled | Active (pushed) / Inactive (not pushed) | |
| Vehicle Propulsion Mode with vehicle speed detected above 4 km/h (2.5 MPH) press and hold S38 On/Off Vehicle Switch for 2 s or press and release it 2 times within 5 S. | Vehicle will transition from Propulsion Mode to Run Mode (Ignition On Propulsion system Inactive). | Active (pushed) / Inactive (not pushed) | |
| **NOTE: If the transmitter is not moved for more than 1 hour it will become inactive.** | | | |

## Service Mode

Service Mode is the Run Power Mode with power mode timeout disabled. This can only be done with the Service Tool.

## Automatic Power Mode Timeouts

**Note:** If the Transmitter/Fob remains stationary and is not moved for one hour, it will go to sleep and may create a fob not in range condition.

This system is designed to prevent batteries from going dead in the event the ignition is left on while unattended, it is also designed to shut the vehicle off if left running unattended. After a Power Mode timeout, the Power Mode Master is responsible for shutting down the or transitioning the vehicle into the low parasitic sleep state “OFF” Power Mode. This Power Mode timeout strategy uses Vehicle Speed, Vehicle Power Mode, Parked Status and other Vehicle Conditions to make the timeout determination.

### Accessory Power Mode

The Accessory Power Mode will timeout after approximately 5 minutes. The timer will Start once the system has determined it is in the Accessory Power Mode status. After the timer expires the Power Mode will change to the OFF Power Mode.

### Run Power Mode

If the conditions listed below are met the Run Power Mode will timeout after approximately 40 minutes if the transmitter is in range, or 20 minutes if the transmitter is out of range. The timer will Start once the system has determined it is in the Run Power Mode status and all of the following conditions are met. After the timer expires the Power mode will change to OFF Power Mode.

If any of the following conditions are not met and/or if there is a change in the Brake Pedal or Clutch Pedal status, the Run Mode timeout timer will be disabled, and the timer will restart after all of the conditions are met again.

- Vehicle in Run Mode (Vehicle powered up S38 On/Off Vehicle Switch Green indicator on Propulsion Mode Inactive)
- Propulsion is Inactive
- Vehicle in Park.
- Vehicle Speed is 0 KM/MPH.

- Fast Idle is inactive (If Equipped).
- PTO Remote Start Status is inactive (If Equipped).
- Particulate Filter Cleaning Status is Inactive (if Equipped)
- S38 Vehicle On/Off switch is held for more than 5 to 10 seconds while starting the vehicle. The actual time may vary based on model and/or year.

**Propulsion Power Mode**
If the following conditions listed below are met the Propulsion Power Mode will timeout after approximately 30 minutes if the transmitter is in range, or 15 minutes if the transmitter is out of range. The timer will Start once the system has determined it is in the Propulsion Power Mode status and all of the following conditions are met. After the timer expires the Power mode will change to the OFF Power Mode.

The Propulsion Power Mode timeout can be disabled with the vehicle in Off Power Mode, apply and continue to hold the brake pedal, then press and hold the S38 Vehicle On/Off switch for 5 to 10 seconds (the actual time may vary based on model and/or year). A DIC message will be displayed when Power Mode timeout is disabled.

If any of the following conditions are not met and/or if there is a change in the Brake Pedal or Clutch Pedal status, the Propulsion Mode timeout timer will be disabled, and the timer will restart after all of the conditions are met again.

- Vehicle in Propulsion Mode (Propulsion Active).
- Vehicle in Park.
- Vehicle Speed is 0 KM/MPH.
- Fast Idle is Inactive (If Equipped).
- PTO Remote Start Status is inactive (If Equipped).
- Particulate Filter Cleaning Status is Inactive (if Equipped)
- S38 Vehicle On/Off switch iss held for more than 5 to 10 seconds while starting the vehicle. The actual time may vary based on model and/or year.

### Relay Controlled Power Mode

The BCM uses discrete push button switch inputs, transmitter in range status, current power mode state, and brake pedal position state to distinguish the correct power mode (Off, Accessory Mode, Run Mode, Start/Propulsion Mode). The BCM, after determining the desired power mode, will activate the appropriate relays for that power mode.

The retained accessory power relay remains on for a timed period after the Ignition Mode is OFF. Refer to *Retained Accessory Power Description and Operation 9-1068* for more information on the retained accessory power function.

### Push Button Start

The ignition mode switch has 2 LEDs that indicate the vehicle power mode Amber for Accessory Mode and Green for Run or Start/Propulsion Modes. When the vehicle is in the OFF mode, both LED’s will be OFF. Momentarily pressing the S38 On/Off Vehicle Switch button once, brake pedal not applied, the vehicle will enter into the Accessory Mode and the Amber LED will illuminate. The Accessory Mode will timeout after approximately 5 min to help reduce battery drain. With the ignition OFF, brake pedal not pressed, then pressing and holding the S38 On/Off Vehicle Switch for 5 s will place the vehicle in Run Mode (Ignition ON without the Propulsion Mode Active). The vehicle will stay powered up for approximately 40 minutes if the transmitter is in range, or 20 minutes if the transmitter is out of range, and the Green LED will illuminate.

With the ignition OFF brake pedal pressed, then press and release the S38 On/Off Vehicle Switch, the vehicle will enter Start/Propulsion Mode and the Green LED will illuminate, the engine will crank and the engine will be running for Internal Combustion Engines (ICE), or Propulsion mode will go Active on Electric Vehicles (EV). The Propulsion Mode will timeout after approximately 30 minutes if the transmitter is in range, or 15 minutes if the transmitter is out of range. The timer will stop when the vehicle is shifted out of PARK or the brake pedal is pressed and released, the timer will reset after the vehicle is placed back in PARK with the Propulsion Mode Active.

Both LED’s have the voltage supplied from the body control module (BCM). The ignition mode switch sends the ignition mode switch status to the passive entry passive start module (PEPS) and to the BCM. The PEPS module sends a redundant signal to the BCM with the ignition mode switch status.

## Transport Mode

Transport Mode is designed to reduce the parasitic load of some modules during shipping and/or during vehicle storage. Some features may be disabled or have reduced functionality while Transport Mode is ON. Transport Mode is enabled and disabled by either of the following methods:

- With the Scan Tool Diagnostics > Body Control Module > Control Functions > Power Mode.
- Turning the hazard flashers ON, apply and hold the brake pedal, then press and hold the ignition mode switch for greater than 15 s. For vehicles equipped with a DIC a message Transport Mode On when it is enabled and Transport Mode Off when it is disabled will be displayed for a predetermined amount of time. For vehicles equipped without a DIC, the battery indicator light will constantly flash on the Instrument Cluster when Transport Mode is enabled.

## Battery Saver Mode

There are 7 different Battery Saver Modes. Battery Saver Modes 1 to 3 occur in Accessory and Run Power Modes (vehicle on propulsion system Inactive) if the battery voltage drops below approximately 11.5 V. Battery Saver Modes 4 to 7 occur in the Off Power Mode only. Battery Saver Modes 4 to 7 may set DTC’s.

- Battery Saver Mode 1: DIC message “Battery Low, Start Vehicle”, 4 chimes
- Battery Saver Mode 2: DIC message “Battery Low, Start Vehicle”, Load Shed Level 3 is activated
- Battery Saver Mode 3: DIC message “Battery Low, Start Vehicle”, Radio/Infotainment shut off, Load Shed Level 3 active
- Battery Saver Mode 4: Battery Saver Mode Ignition Off – Parasitic Current draw of 100 mA or greater
- Battery Saver Mode 5: Battery Saver Mode Ignition Off – Parasitic Current draw of 1 A or greater
- Battery Saver Mode 6: Battery Saver Mode Ignition Off – Battery Voltage less than 12.0 V
- Battery Saver Mode 7: Battery Saver Mode Ignition Off – Battery Voltage less than 11.6 V

## Load Shedding

Prior to Load shedding Idle Boost will occur, the idle speeds will be increased by 25 to 300 RPM to help maintain a normal battery voltage. Idle Boost may be noticeable to the driver. If the battery voltage continues to drop below a normal state then load shedding will go active and it will start to reduce electric loads for components that will not impact the safe operation of vehicle. At load shed levels 2 and 3 a DIC message will be displayed “Reducing Features To Save Battery”. When load shedding is active the customer may begin to notice features starting to have reduced functions or may become inoperative. Examples of affected loads are radio, HVAC blower(s) front and rear (if equipped), heated/ventilated seats, heated mirrors, rear defogger and other devices with heavy electrical draws. Idle Boost and load shed levels can be observed with the scan tool.

### Idle Boost 1

Idle is increased by 25-100 RPM and generally is not noticeable to most drivers.

### Idle Boost 2

Idle is increased by 50–200 RPM and generally is not noticeable to most drivers.

### Idle Boost 3

Idle is increased by 100–300 RPM and may be noticeable to most drivers.

### Load Shed Level 1

Reduces load current by 25%.

### Load Shed Level 2

Reduces load current by 50%.

### Load Shed Level 3

Electric loads for components that will not impact the safe operation of vehicle will be turned Off.

## BCM Awake/Sleep States

The BCM is able to control or perform all of the BCM functions in the awake state. The BCM enters the sleep state when active control or normal monitoring of system functions has stopped and a time limit has passed. The BCM must detect certain wake-up inputs before entering the awake state. The BCM monitors for these inputs during the sleep state.

The BCM will enter the awake state if any of the following wake-up inputs are detected:

- Activity on the serial data line
- Detection of a battery reconnect
- Any door open signal
- Headlamps ON
- Ignition ON

- Park lamps ON
- Keyless entry or remote start message

The BCM will enter a sleep state when all of the following conditions exist:

- Ignition OFF, transmitter is out of range
- No activity exists on the serial data line.
- No outputs are commanded.
- No delay timers are actively counting.
- No wake-up inputs are present.

If all these conditions are met, the BCM will enter a low power or sleep condition.

## Retained Accessory Power Description and Operation

### Retained Accessory Power

The Retained Accessory Power (RAP) & Interruptible RAP (IRAP) Circuits are controlled by the K9 Body Control Module (BCM). The BCM is the Power Mode Master, it utilizes various Vehicle inputs to determine the Vehicle Power Mode and sends this information via Serial Data and providing associated electrical signals to the entire vehicle for proper feature operation.

The BCM monitors the vehicles power modes, and door ajar/open switch status to determine whether the retained accessory power should be initiated and remain active or be terminated. The RAP output is optional based on the vehicles option contents. When utilized, the RAP Output control can be used to control a RAP Relay, it may provide direct power, or a serial data message to vehicle devices/modules from the BCM.

### Retained Accessory Power Relay Coil Control Circuit (If Equipped)

The BCM keeps the device or relay (if equipped) energized during all power modes, except Off-Awake and Crank. The device(s) remain active for approximately 10 min after the Vehicle is placed into the OFF Power Mode, provided none of the doors are opened.

Retained accessory power will end when one of the following conditions are met:

- The BCM receives an input from any door ajar switch indicating the opening of the door after the OFF Power Mode is achieved.

**Note:** If the BCM receives a door open/ajar active signal when the vehicle is placed into the OFF Power Mode, the retained accessory power will not initiate.

- The BCM internal timer for the retained accessory power expires after approximately 10 min.

Systems powered by the retained accessory power control circuit during the retained accessory power mode are as follows:

**Note:** The vehicle may not be equipped with all components as listed below.

- 12 V Accessory Power Receptacle
- Cigarette Lighter Receptacle
- Window Switches
- Sunroof Control Module (If Equipped)
- Sunroof Switch (If Equipped)
- Mobile Device Wireless Charger Module
- Mobile Telephone Control Module (If Equipped)
- Traffic Data Receiver (If Equipped)
- Transmission Shift Lever Position Indicator (w/floor mounted console gear shift)

### Serial Data Controlled Retained Accessory Power

Retained accessory power systems controlled by serial data are as follows:

#### Radio

Radio retained accessory power activation/termination is the same as relay operation with one exception; the only door that will turn the radio off during retained accessory power is the driver door open/ajar switch. The USB Ports will function the same as the radio.

#### Vehicle Communication Interface Module (VCIM) (Onstar®) (If Equipped)

VCIM RAP activation/termination is the same as radio operation with 1 exception; if there is an active call and the vehicle is placed in the OFF Power Mode, the VCIM will remain in RAP mode, and keep the radio in RAP mode until the call is terminated.

### Interruptible Retained Accessory Power

The Power Mode Master (PMM) Controls components as needed If equipped with a RAP relay, the BCM controls the Retained Accessory Power with an exception, Interruptible Retained Accessory Power (IRAP) is deactivated during transmitter authentication. During Transmitter Authentication the PMM will deactivate components including IRAP to prevent Radio Frequency (RF) Interference (RFI) that may cause a “NO REMOTE DETECTED” message to be displayed on the drivers information center.

**Note:** If transmitter Authentication occurs while in Run or Propulsion Modes, it is normal to for IRAP to be interrupted momentarily (i.e. items connected to auxiliary power ports or chargers may momentarily go off then come back on).

If a remote transmitter was not been previously detected, Transmitter Authentication can occurs under any of the following conditions:

- The drivers side front door is opened.
- The drivers side rear door is opened.
- The S38 Vehicle On/Off Switch is pressed.

## Special Purpose Vehicle Module Description and Operation

### Special Purpose Vehicle Module

The K56U Special Purpose Vehicle Module is an interface module that allows the Upfitter to interface with GM vehicle’s secure CAN networks to request predefined actions and to indirectly monitor key vehicle data that is available on the vehicle network.

The module is available to be ordered by dealer or as an Accessory to be installed. If ordered by the dealer it will be installed and programmed by the assembly plant with the output controls disabled. If ordered as an Accessory it will need to be installed on the vehicle, programmed and configured.

### Input Controls

The Input Controls are Defaulted on and a GM approved Upfitter Switch must be installed to operate the appropriate Output control that must be enabled by the Upfitter. The input circuits may set a DTC if a non approved switch is installed.

**Switches**
There are 5 predefined functions that may be requested by switching analog inputs to the required input voltage range.

Refer to *https://www.gmupfitter.com/* for details on all available options

### Output Controls

The SPVM has ten outputs that can be configured with a user interface to allow outputs to be switched ON or OFF based on the data that is monitored and available from the GM vehicle network.

### Input/Output Configuration

**Inputs:**

- Battery Power
- Ground
- High Speed CAN (hi/lo)
- 10 Analog Inputs (0.5A Maximum load)

**Outputs:**

- High Speed CAN (hi/lo)
- 10 Digital Outputs

### Module Configuration

Refer to *https://www.gmupfitter.com/*

# Section 10

# Roof

**Sunroof** .............................................. **10-2**
  **Schematic and Routing Diagrams** ................................................**10-2**
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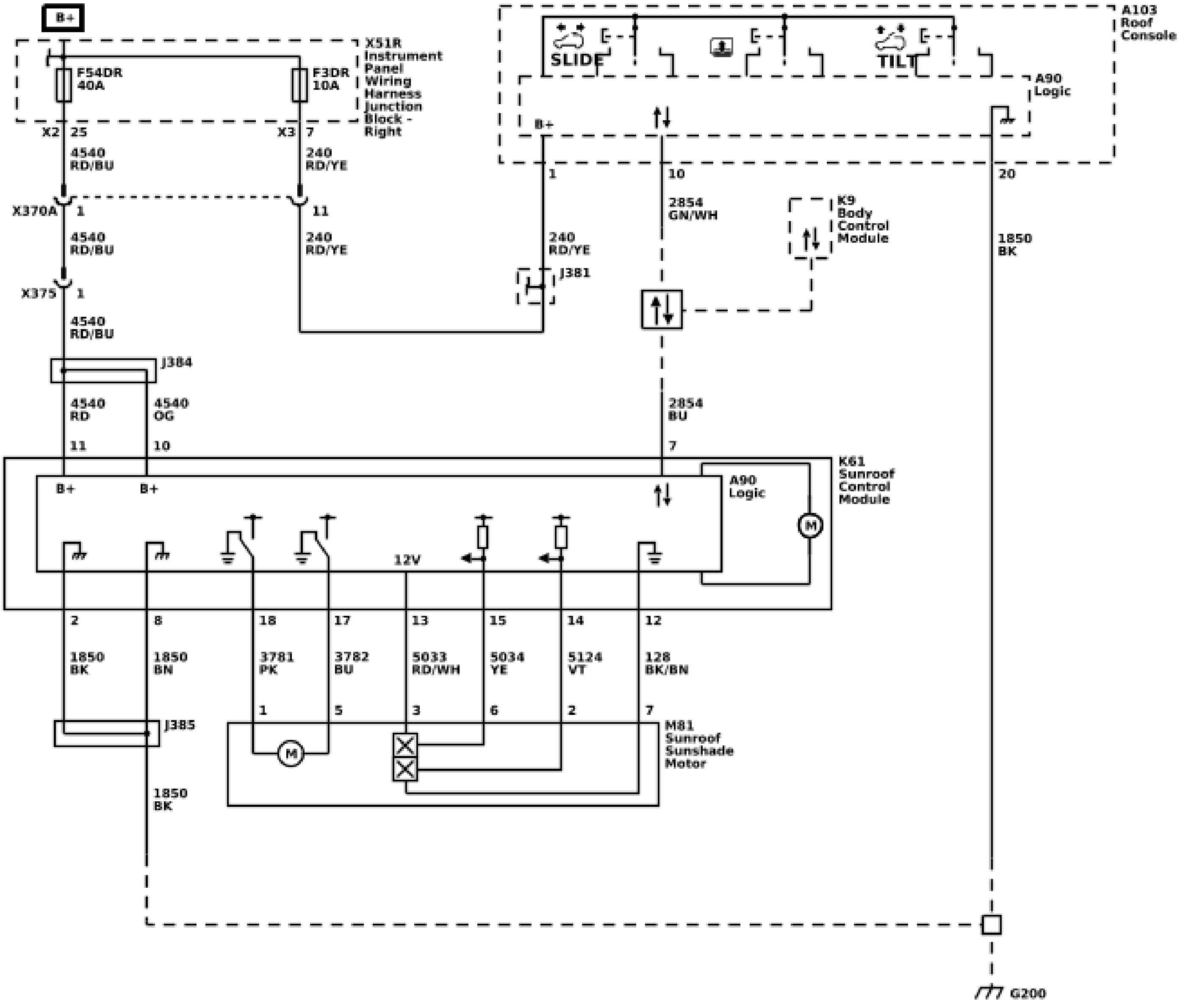
# Roof

## Sunroof

### Schematic and Routing Diagrams

## Sunroof Schematics (Sunroof (C3U))


B+
F54DR
40A
F3DR
10A
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
X2 25
X3 7
4540
RD/BU
240
RD/YE
X370A 1
11
X375 1
J384
4540
RD
4540
OG
11
10
B+
B+
J381
A103
Roof
Console
SLIDE
TILT
A90
Logic
B+
1
10
20
2854
GN/WH
K9
Body
Control
Module
1850
BK
2854
BU
7
K61
Sunroof
Control
Module
M
12V
2
8
18
17
13
15
14
12
1850
BK
1850
BN
3781
PK
3782
BU
5033
RD/WH
5034
YE
5124
VT
128
BK/BN
1
5
3
6
2
7
J385
M81
Sunroof
Sunshade
Motor
G200

6885695

# Description and Operation

# Section 11

# Safety and Security

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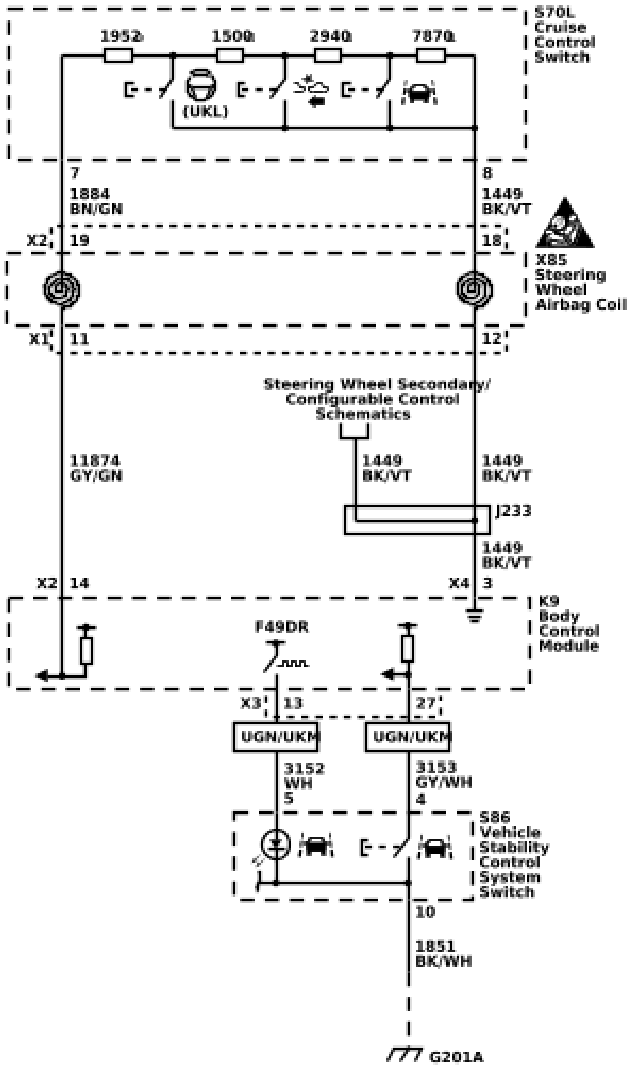
# Safety and Security

## Driver Assistance Systems

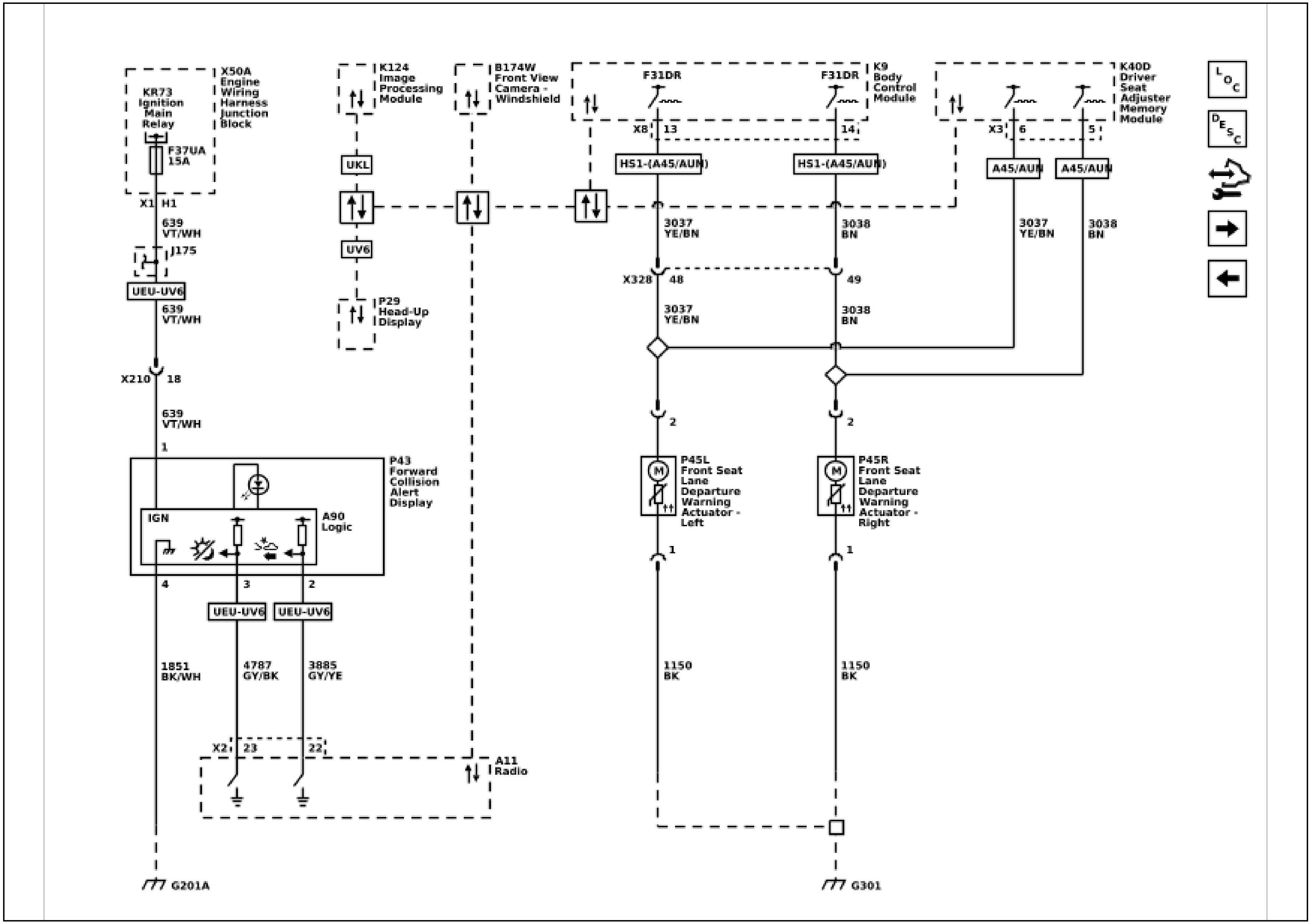
### Schematic and Routing Diagrams

## Driver Assistance Systems Schematics (Controls - Forward Collision Alert, Lane Keep Assist, and Super Cruise)


S70L
Cruise
Control
Switch
1952Ω
1500Ω
2940Ω
7870Ω
(UKL)
7
1884
BN/GN
8
1449
BK/VT
X2
19
18
X85
Steering
Wheel
Airbag Coil
X1
11
12
Steering Wheel Secondary/
Configurable Control
Schematics
11874
GY/GN
1449
BK/VT
1449
BK/VT
J233
1449
BK/VT
X2
14
X4
3
K9
Body
Control
Module
F49DR
X3
13
27
UGN/UKM
UGN/UKM
3152
WH
5
3153
GY/WH
4
S86
Vehicle
Stability
Control
System
Switch
10
1851
BK/WH
G201A

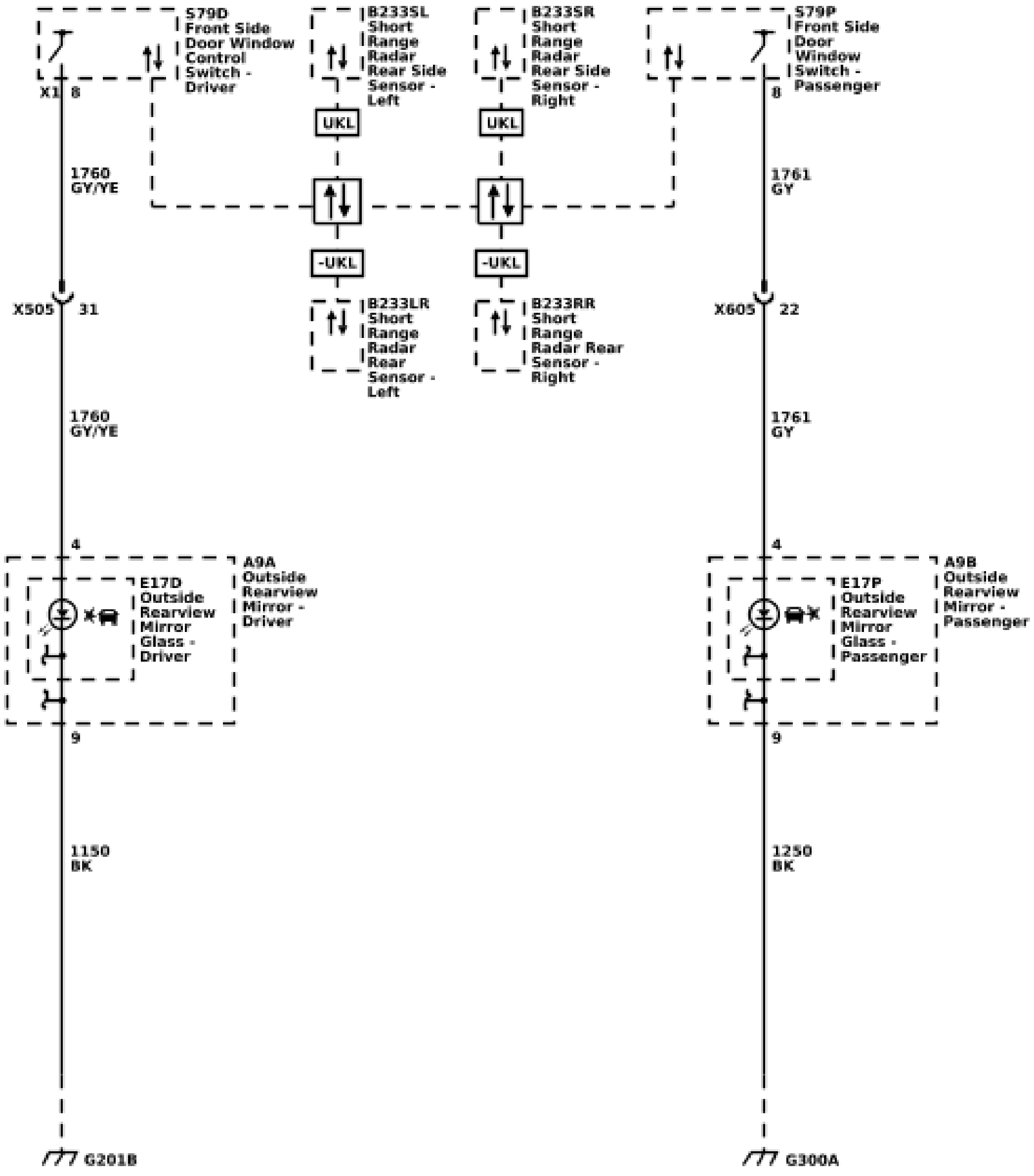
6885696

## Driver Assistance Systems Schematics (Collision Alert Indicators and Safety Alert Seat)


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F37UA 15A
X1 H1
639 VT/WH
J175
UEU-UV6
639 VT/WH
X210 18
639 VT/WH
1
P43 Forward Collision Alert Display
IGN
A90 Logic
4
3
2
UEU-UV6
UEU-UV6
1851 BK/WH
4787 GY/BK
3885 GY/YE
X2 23
22
A11 Radio
G201A
K124 Image Processing Module
UKL
UV6
P29 Head-Up Display
B174W Front View Camera - Windshield
F31DR
F31DR
K9 Body Control Module
X8 13
14
HS1-(A45/AUN)
HS1-(A45/AUN)
3037 YE/BN
3038 BN
X328 48
49
3037 YE/BN
3038 BN
2
2
P45L Front Seat Lane Departure Warning Actuator - Left
P45R Front Seat Lane Departure Warning Actuator - Right
M
M
1
1
1150 BK
1150 BK
G301
K40D Driver Seat Adjuster Memory Module
X3 6
5
A45/AUN
A45/AUN
3037 YE/BN
3038 BN
L O C
D E S C

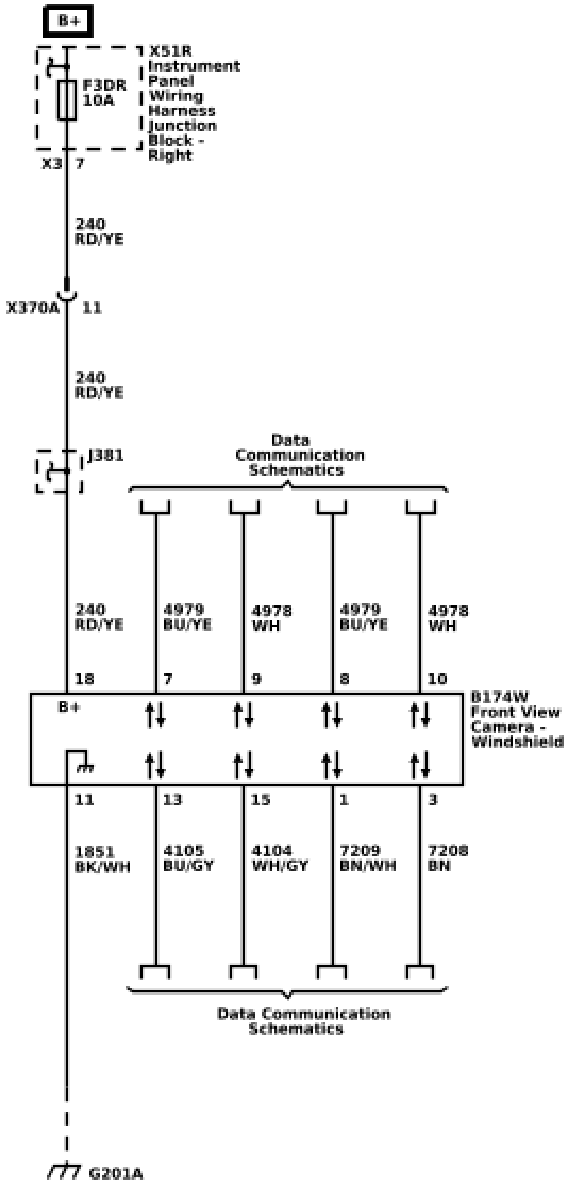
6885697

## Driver Assistance Systems Schematics (Obstacle Detection - Side Blind Zone Indicators)


S79D Front Side Door Window Control Switch - Driver
X1 8
1760 GY/YE
B233SL Short Range Radar Rear Side Sensor - Left
UKL
-UKL
B233LR Short Range Radar Rear Sensor - Left
B233SR Short Range Radar Rear Side Sensor - Right
UKL
-UKL
B233RR Short Range Radar Rear Sensor - Right
S79P Front Side Door Window Switch - Passenger
8
1761 GY
X505 31
1760 GY/YE
X605 22
1761 GY
4
A9A Outside Rearview Mirror - Driver
E17D Outside Rearview Mirror Glass - Driver
9
1150 BK
G201B
4
A9B Outside Rearview Mirror - Passenger
E17P Outside Rearview Mirror Glass - Passenger
9
1250 BK
G300A

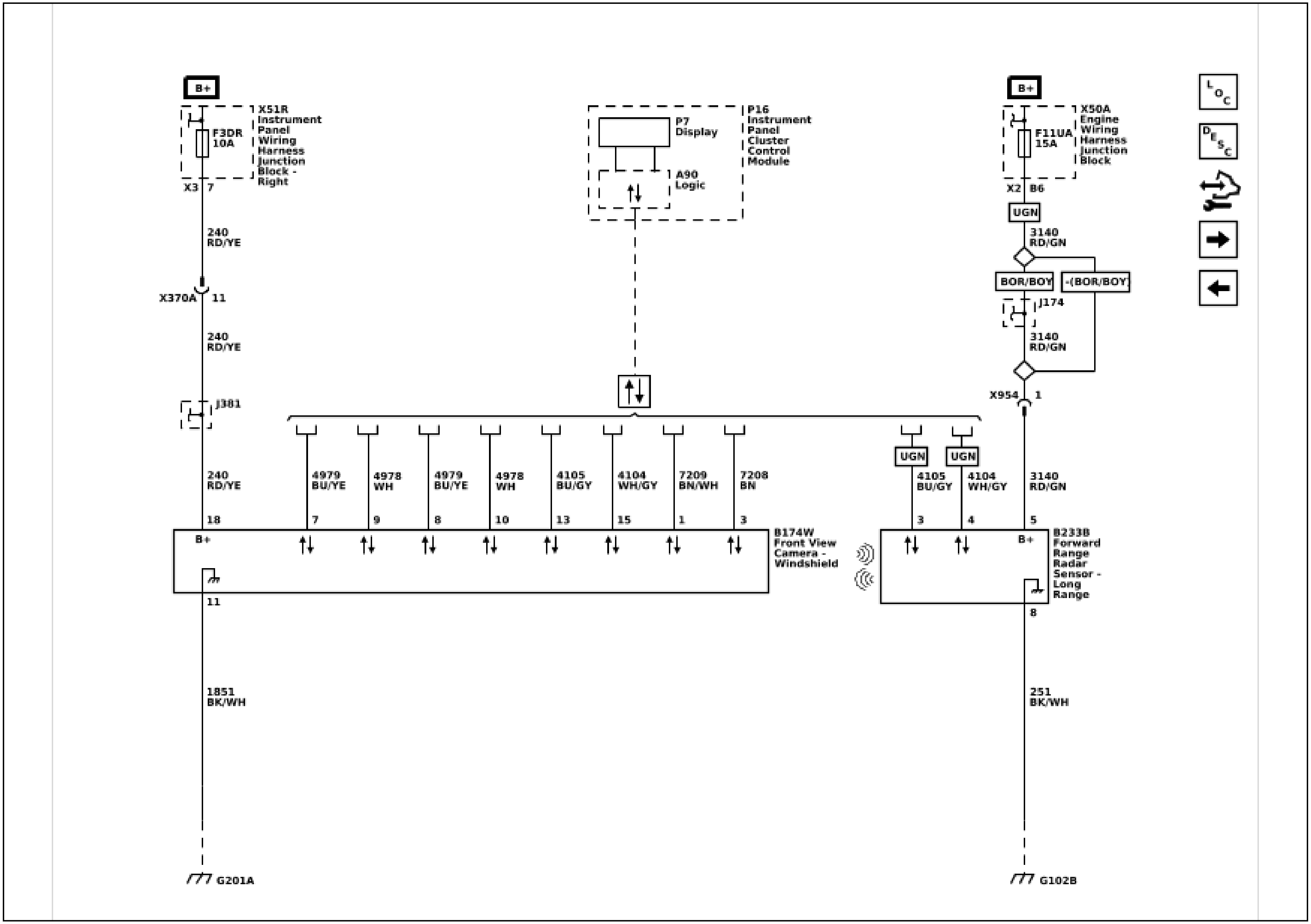
6885698

## Driver Assistance Systems Schematics (Camera - Forward Collision Alert and Lane Keep Assist (UKL))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
Data Communication Schematics
240 RD/YE
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
18
7
9
8
10
B+
B174W Front View Camera - Windshield
11
13
15
1
3
1851 BK/WH
4105 BU/GY
4104 WH/GY
7209 BN/WH
7208 BN
Data Communication Schematics
G201A

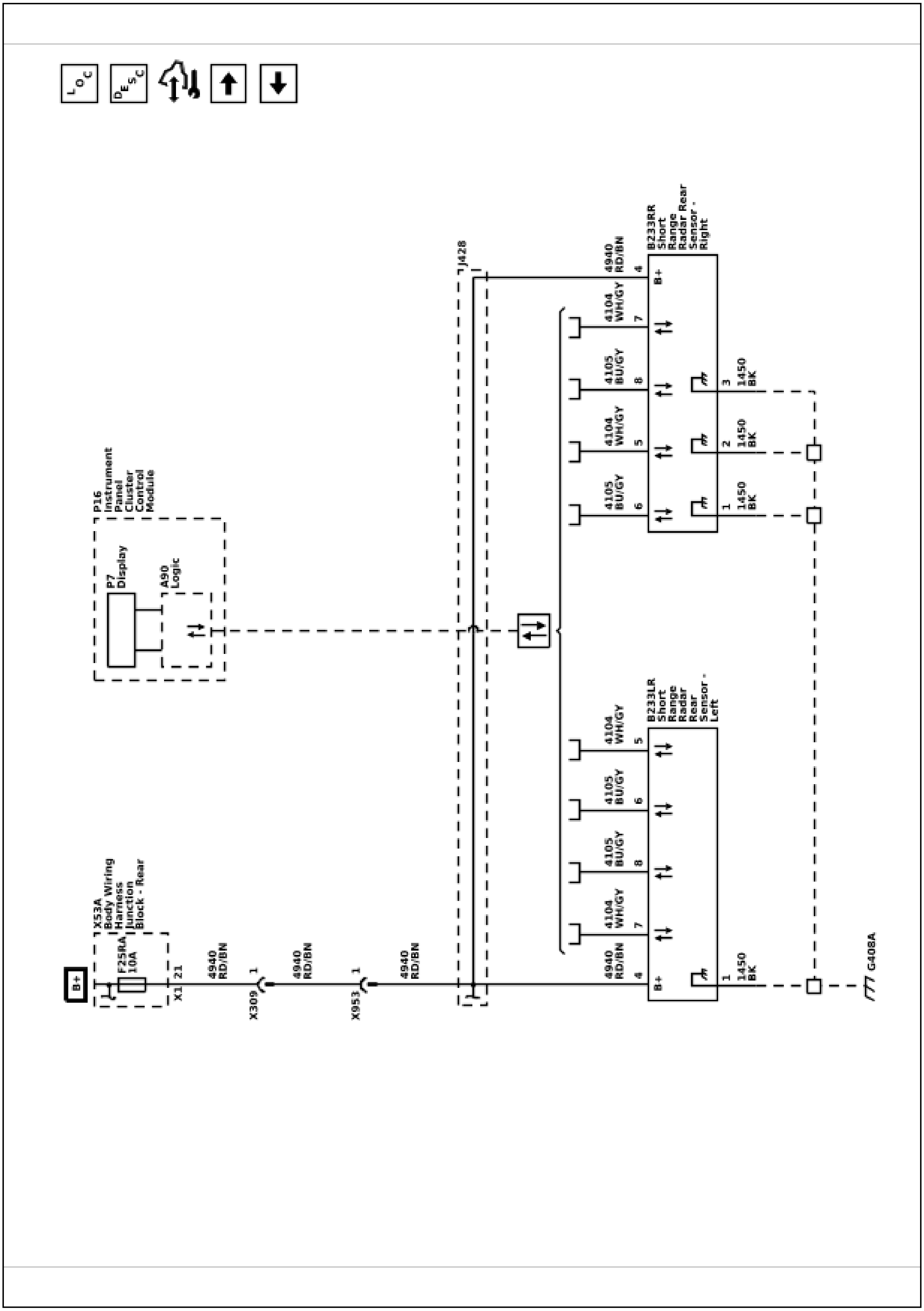
6885699

## Driver Assistance Systems Schematics (Collision Mitigation - Front View Windshield Camera Power, Ground, Serial Data, and Forward Range Radar Sensor ((UGN / UHY) - UKL))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
240 RD/YE
18
B+
11
1851 BK/WH
G201A
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
4979 BU/YE
7
4978 WH
9
4979 BU/YE
8
4978 WH
10
4105 BU/GY
13
4104 WH/GY
15
7209 BN/WH
1
7208 BN
3
B174W Front View Camera - Windshield
B+
X50A Engine Wiring Harness Junction Block
F11UA 15A
X2 B6
UGN
3140 RD/GN
BOR/BOY
-(BOR/BOY)
J174
3140 RD/GN
X954 1
UGN
UGN
4105 BU/GY
3
4104 WH/GY
4
3140 RD/GN
5
B+
B233B Forward Range Radar Sensor - Long Range
8
251 BK/WH
G102B
L O C
D E S C

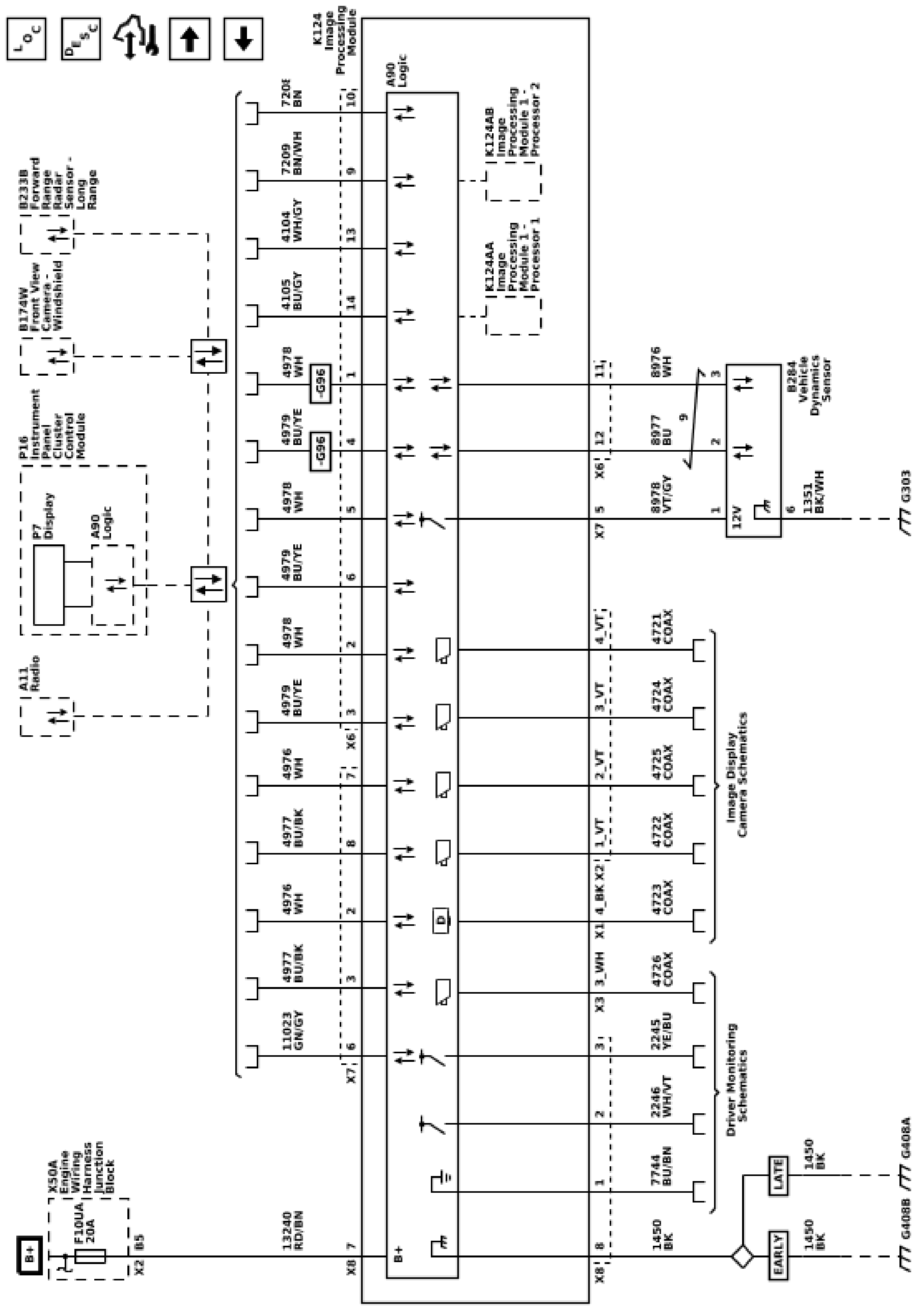
6885700

## Driver Assistance Systems Schematics (Obstacle Detection - Rear Side Modules ((UKI / UKW) - UKL))


B+
X53A Body Wiring Harness Junction Block - Rear
F25RA 10A
X1 21
4940 RD/BN
X309 1
4940 RD/BN
X953 1
4940 RD/BN
J428
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
B233LR Short Range Radar Rear Sensor - Left
4940 RD/BN 4 B+
4104 WH/GY 7
4105 BU/GY 8
4105 BU/GY 6
4104 WH/GY 5
1 1450 BK
G408A
B233RR Short Range Radar Rear Sensor - Right
4940 RD/BN 4 B+
4104 WH/GY 7
4105 BU/GY 8
4104 WH/GY 5
4105 BU/GY 6
1 1450 BK
2 1450 BK
3 1450 BK

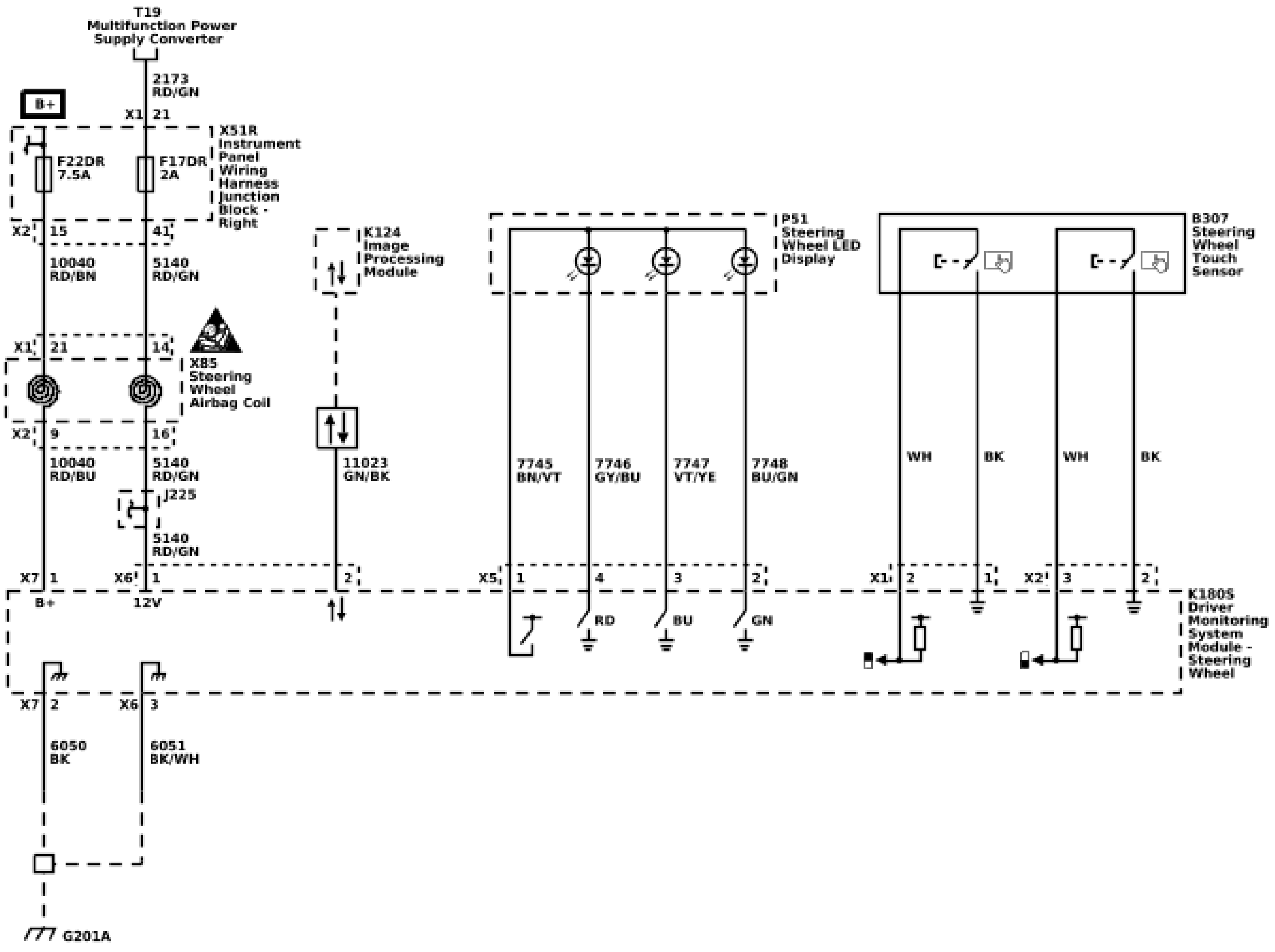
6885701

## Driver Assistance Systems Schematics (Collision Mitigation - Module Power, Ground, Serial Data, References, and Vehicle Dynamic Sensor (UKL))



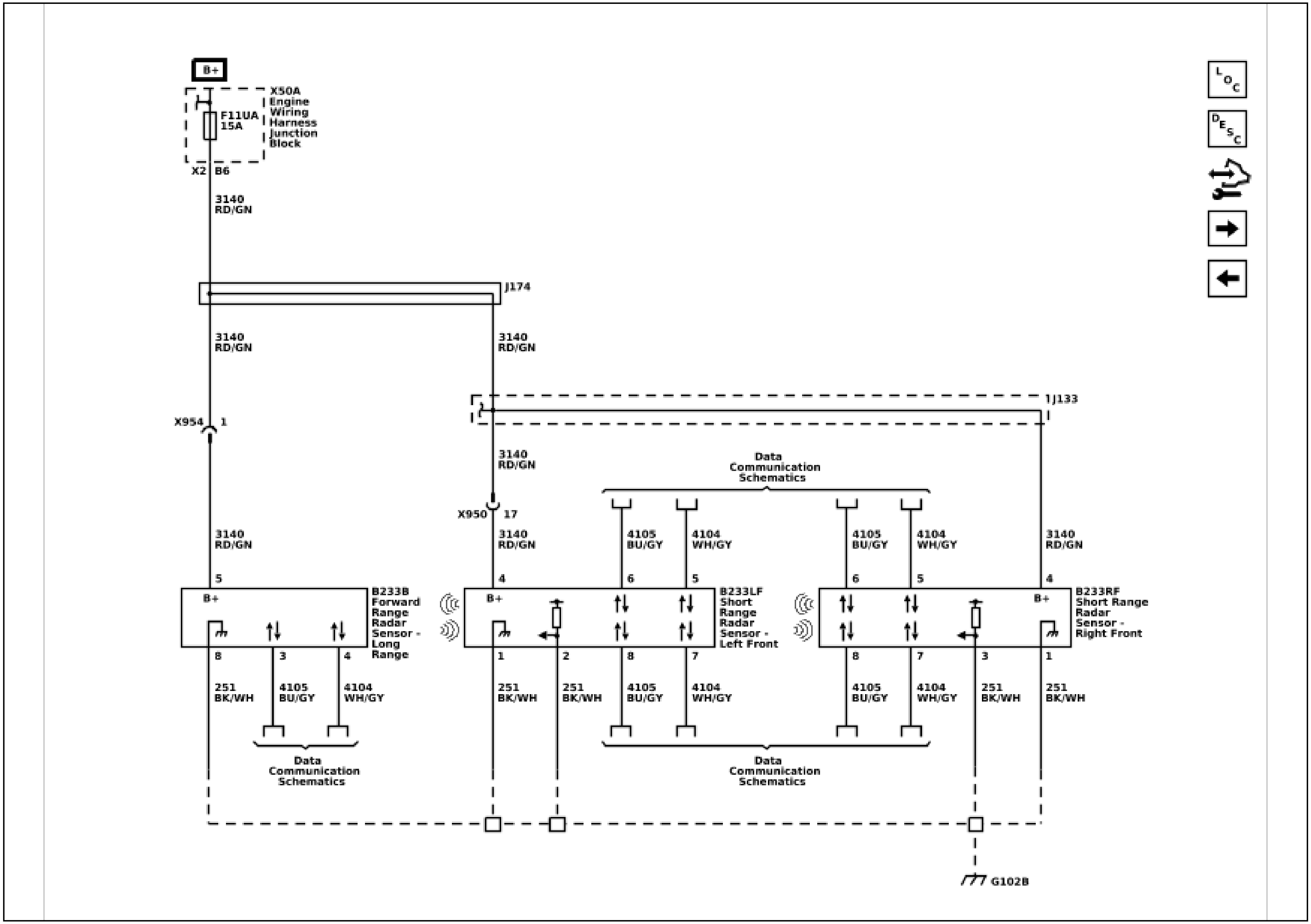
6885702
B+
X50A Engine Wiring Harness Junction Block
F10UA 20A
X2 B5
13240 RD/BN
X8 7
A11 Radio
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
B174W Front View Camera - Windshield
B233B Forward Range Radar Sensor - Long Range
K124 Image Processing Module
A90 Logic
K124AA Image Processing Module 1 - Processor 1
K124AB Image Processing Module 1 - Processor 2
X7
11023 GN/GY 6
4977 BU/BK 3
4976 WH 2
4977 BU/BK 8
4976 WH 7
X6
4979 BU/YE 3
4978 WH 2
4979 BU/YE 6
4978 WH 5
4979 BU/YE 4
4978 WH 1
G96
4105 BU/GY 14
4104 WH/GY 13
7209 BN/WH 9
7208 BN 10
B+
D
X8 8
1450 BK
X1 1
7744 BU/BN
2
2246 WH/VT
3
2245 YE/BU
X3 3_WH
4726 COAX
X1 4_BK
4723 COAX
X2 1_VT
4722 COAX
2_VT
4725 COAX
3_VT
4724 COAX
4_VT
4721 COAX
X7 5
8978 VT/GY
X6 12
8977 BU
11
8976 WH
9
Driver Monitoring Schematics
Image Display Camera Schematics
EARLY
LATE
1450 BK
G408B
1450 BK
G408A
B284 Vehicle Dynamics Sensor
1 2 3 6
12V
1351 BK/WH
G303

## Driver Assistance Systems Schematics (Steering Wheel Lightbar and Touch Sensors (UKL))


T19 Multifunction Power Supply Converter
2173 RD/GN
X1 21
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F22DR 7.5A
F17DR 2A
X2 15
41
10040 RD/BN
5140 RD/GN
K124 Image Processing Module
X1 21
14
X85 Steering Wheel Airbag Coil
X2 9
16
10040 RD/BU
5140 RD/GN
J225
5140 RD/GN
11023 GN/BK
P51 Steering Wheel LED Display
7745 BN/VT
7746 GY/BU
7747 VT/YE
7748 BU/GN
B307 Steering Wheel Touch Sensor
WH
BK
WH
BK
X7 1
B+
X6 1
12V
2
X5 1
4
3
2
RD
BU
GN
X1 2
1
X2 3
2
K180S Driver Monitoring System Module - Steering Wheel
X7 2
X6 3
6050 BK
6051 BK/WH
G201A

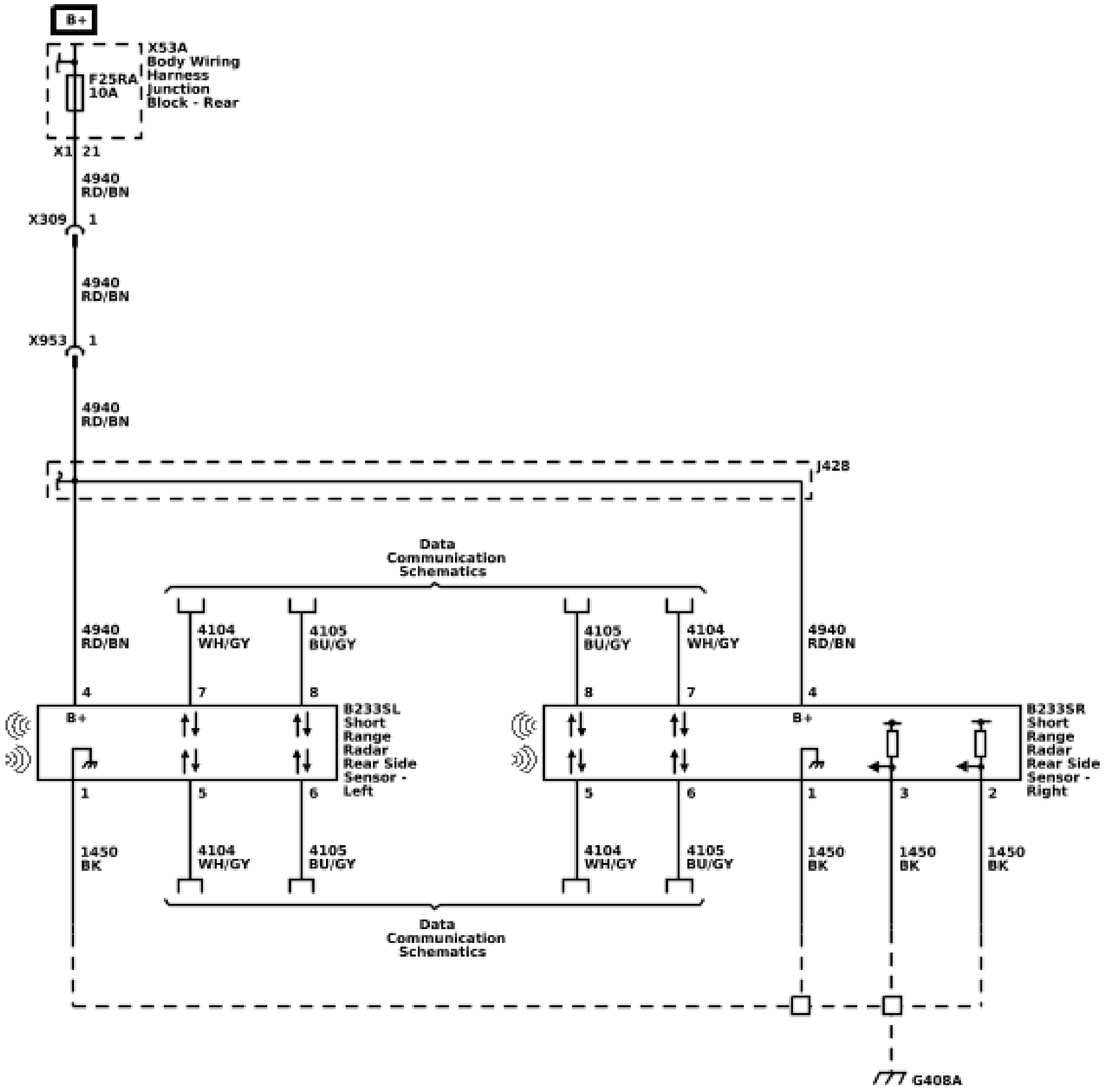
6885703

## Driver Assistance Systems Schematics (Collision Mitigation - Front Radar Sensors (UKL))


B+
X50A Engine Wiring Harness Junction Block
F11UA 15A
X2 B6
3140 RD/GN
J174
X954 1
X950 17
J133
Data Communication Schematics
4105 BU/GY
4104 WH/GY
B233B Forward Range Radar Sensor - Long Range
B233LF Short Range Radar Sensor - Left Front
B233RF Short Range Radar Sensor - Right Front
251 BK/WH
5
4
6
8
3
1
2
7
G102B

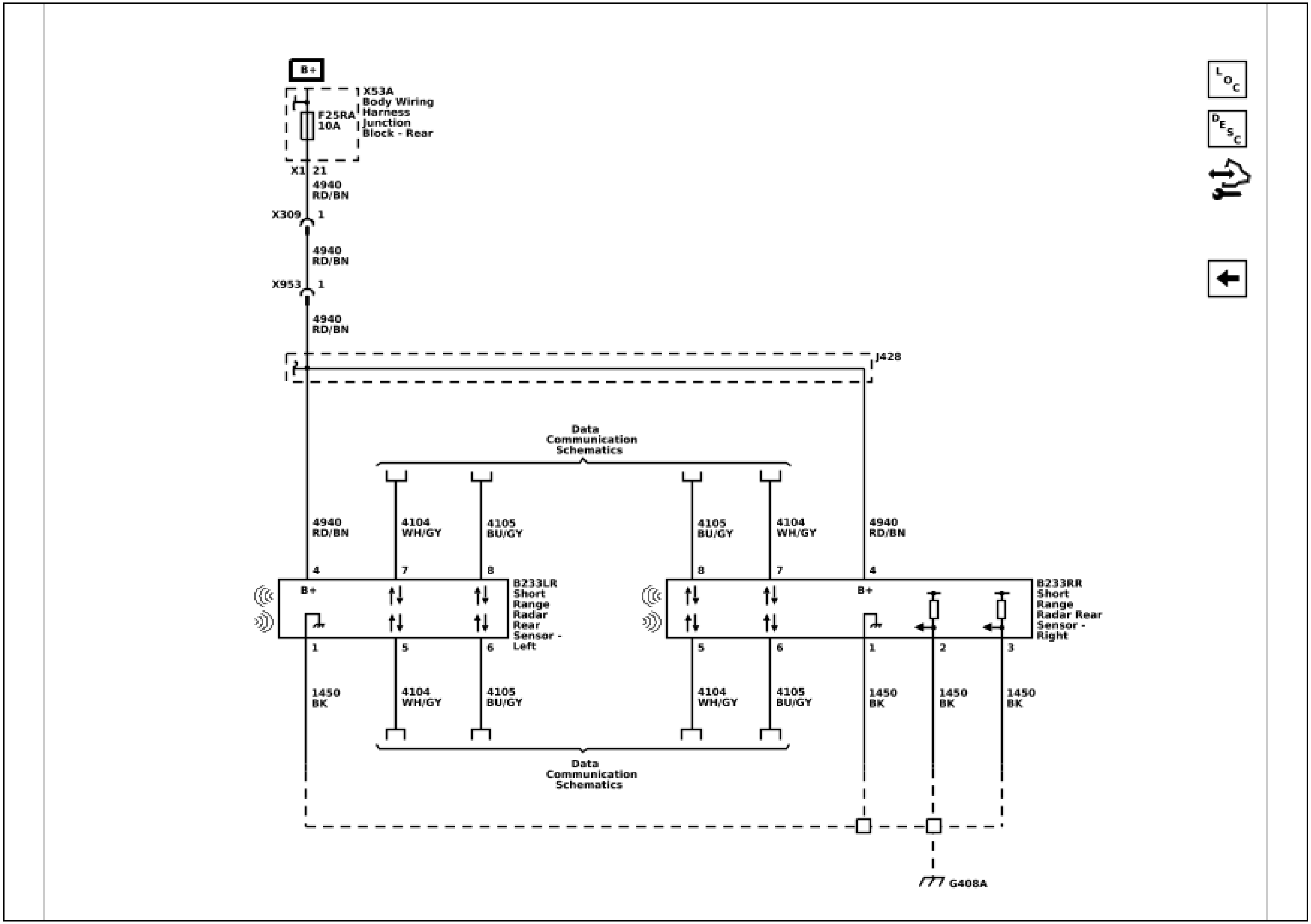
6885704

## Driver Assistance Systems Schematics (Collision Mitigation - Rear Side Short Radar Sensors (UKL))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F25RA
10A
X1 21
4940
RD/BN
X309 1
4940
RD/BN
X953 1
4940
RD/BN
J428
Data
Communication
Schematics
4940
RD/BN
4104
WH/GY
4105
BU/GY
4105
BU/GY
4104
WH/GY
4940
RD/BN
4 7 8
B+
B233SL
Short
Range
Radar
Rear Side
Sensor -
Left
1 5 6
8 7 4
B+
B233SR
Short
Range
Radar
Rear Side
Sensor -
Right
5 6 1 3 2
1450
BK
4104
WH/GY
4105
BU/GY
4104
WH/GY
4105
BU/GY
1450
BK
1450
BK
1450
BK
Data
Communication
Schematics
G408A

6885705

## Driver Assistance Systems Schematics (Collision Mitigation - Short Range Rear Radars (UKI / UVZ))


L O C
D E S C
B+
X53A Body Wiring Harness Junction Block - Rear
F25RA 10A
X1 21
4940 RD/BN
X309 1
4940 RD/BN
X953 1
4940 RD/BN
J428
Data Communication Schematics
4940 RD/BN
4104 WH/GY
4105 BU/GY
4105 BU/GY
4104 WH/GY
4940 RD/BN
4
7
8
8
7
4
B+
B233LR Short Range Radar Rear Sensor - Left
B+
B233RR Short Range Radar Rear Sensor - Right
1
5
6
5
6
1
2
3
1450 BK
4104 WH/GY
4105 BU/GY
4104 WH/GY
4105 BU/GY
1450 BK
1450 BK
1450 BK
Data Communication Schematics
G408A
6885706

# Description and Operation

## Active Safety System Description and Operation (with UKL)

### Image Processing Module

There is a single control module which contains both K124AA Image Processing Module 1 - Processor 1& K124AB Image Processing Module 1 - Processor 2 on this vehicle. The Super Cruise system can operate on only one processor, but it has a redundant for backup. For more information on Super Cruise, refer to *Super Cruise Description and Operation 11-35*

### Super Cruise

Super Cruise is a combination of many systems and modules. Super Cruise is Lane Centering Control, refer to *Lane Keep Assist Description and Operation 11-30* and Adaptive Cruise Control, refer to *Adaptive Cruise Control Description and Operation 11-23* running simultaneously.

The active safety system is a comprehensive feature set designed to help a driver avoid collisions or reduce crash damage while driving, backing, and parking. The K124 Image Processing Module is the primary controller for the active safety system. The image processing module communicates on multiple serial data busses to share information with various control modules throughout the vehicle. The K124 Image Processing Module uses various sensors and control modules to monitor the vehicle surroundings and take deliberate action to avoid collisions or reduce crash damage. The active safety system tightly integrates the forward collision alert, adaptive cruise control, parking assist, and active emergency braking systems into a single cohesive system.

The K124 Image Processing Module communicates via serial data on CAN 8 with the B174W Front View Camera - Windshield, B233B Forward Range Radar Sensor - Long Range, B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front to create a virtual fusion image of the area in front of the vehicle. The K124 Image Processing Module observes an actual visual image of the area directly ahead of the vehicle, within 60 m (197 ft), with the B174W Front View Camera - Windshield. The B233B Forward Range Radar Sensor - Long Range is used to measure the distance to objects that are up to 200 m (656 ft) in front the vehicle and the B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front are used to measure the distance to objects that are within 30 m (98 ft) of the front of the vehicle. Within 60 m (197 ft) of the vehicle, all of these inputs are combined to create a fusion image of the area in front of the vehicle. At up to 200 m (656 ft), the B233B Forward Range Radar Sensor - Long Range will detect and begin tracking objects immediately in front of the vehicle. Within 60 m (197 ft), the B174W Front View Camera - Windshield will confirm objects that have been detected by the B233B Forward Range Radar Sensor - Long Range. The B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front improve cut-in detection, which are objects that enter the vehicle path from the side and are not necessarily detected by the B174W Front View Camera - Windshield and B233B Forward Range Radar Sensor - Long Range, who’s focus are those object directly in front of the vehicle.

The fusion image created by the K124 Image Processing Module is used to detect collision risks and take action based on the immediacy of the risk. When a collision risk exists, the K124 Image Processing Module will alert the driver using the forward collision alert system. This will provide the driver with a visual and audible or haptic alert that a collision risk has been detected. If the driver does not take action to reduce the risk of collision, such as changing lanes or applying the brakes, the intelligent brake assist system will pre-fill the brake hydraulic system to reduce system response time and increase pressure when quickly applying the brakes. If a collision risk is imminent, the K124 Image Processing Module will enter automatic collision preparation, which will automatically apply the brakes in an effort to mitigate the collision or reduce collision damage.

The K124 Image Processing Module communicates with the steering angle sensor (part of the K43 Power Steering Control Module) and the multi-axis acceleration sensor (part of the K36 Restraints Control Module) on CAN 1. These sensors are used to determine the intended vehicle path. Using the steering data and vehicle acceleration data, the K124 Image Processing Module will determine where the vehicle will be traveling and focus attention on objects in this path. An example would be a driver quickly changing lanes to avoid a collision. This would mitigate the collision risk in the previous lane and the K124 Image Processing Module would quickly transition to tracking objects for any collision risk in the new lane based on intended vehicle path. The K124 Image Processing Module also communicates with the K160 Brake System Control Module to instigate the braking functions of intelligent brake assist and automatic collision preparation.

At the rear of the vehicle, the K124 Image Processing Module uses the B233LR Short Range Radar Sensor - Left Rear, B233RR Short Range Radar Sensor - Right Rear, B233SL Short Range Radar Sensor - Left Rear Side, B233SR Short Range Radar Sensor - Right Rear Side, and the K182 Parking Assist Control Module as part of the backing warning system and the rear automatic braking system. Typical rear parking assist utilizes the K182 Parking Assist Control Module and the four ultrasonic rear parking assist sensors to detect object when reversing at speed of up to 8 km/h (5 mph). The backing warning systems utilizes both the four ultrasonic rear parking assist sensors, as well as the B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side to detect object at speeds above 8 km/h (5 mph). The rear automatic braking system is intended to help avoid or reduce the harm caused by backing crashes or prevent the vehicle from being reversed into an object if the vehicle is already stopped.

**The Active Safety System analyzes data from the various control modules and sensors listed below:**

- K124 Image Processing Module
- B174W Front View Camera - Windshield
- B233B Forward Range Radar Sensor - Long Range
- B233LF Short Range Radar Sensor - Left Front
- B233RF Short Range Radar Sensor - Right Front
- B233LR Short Range Radar Sensor - Left Rear
- B233RR Short Range Radar Sensor - Right Rear
- B233SL Short Range Radar Sensor - Left Rear Side
- B233SR Short Range Radar Sensor - Right Rear Side
- K182 Parking Assist Control Module
- K160 Brake System Control Module

## Component Description

### K124 Image Processing Module

The K124 Image Processing Module analyzes data from various modules, sensors, and switches to provide enhanced safety features. In addition to providing alerts, the K124 Image Processing Module will provide driver assistance through integrated brake assist, automatic collision preparation, rear emergency braking, and adaptive cruise control. Inputs and outputs can either be connected directly to the K124 Image Processing Module or communicate though serial data. The K124 Image Processing Module communicates on CAN 1, CAN 2, and CAN 8.

Forward collision alert, lane departure warning, and park assist alerts can be user selected to either a haptic signal utilizing the driver’s haptic signal motor seat or using beeps through the audio system. This setting can be found in the vehicle personalization menus. See the owner’s manual for more detailed information on vehicle personalization.

If there is a DTC set in any of the modules that the K124 Image Processing Module uses as inputs, it will send a “Service Driver Assist” to the instrument cluster to alert the driver of a problem with the system. No other specific details are given unless the driver attempts to activate a specific system. For example if the driver attempts to turn on lane departure warning, the instrument cluster will display “Lane Departure Unavailable” and the indictor will flash and then go out. A scan tool must be used to read the DTCs that are causing the malfunction to help find the problem. Some of the inputs to the K124 Image Processing Module can affect forward facing features, rear facing features, or all features. Systems to check to determine which area to focus are rear park assist for rear features, and lane departure warning and adaptive cruise control for front features. If none of the active safety system features are operative, there may be an issue with another module on the vehicle not providing the proper data to the K124 Image Processing Module. If all K124 Image Processing Module features are inoperative, check the Adaptive Cruise Control Disable History Data, Lane Keep Assist Disable History Data, and Front Impact Mitigation Disable History Data in the scan tool for the reason for the malfunction. Definitions of parameters and suggestions on what to look for can be found in *K124 Image Processing Module: Scan Tool Information (UGN) 4-247* *K124 Image Processing Module: Scan Tool Information (UKL) 4-251*.

- K124 Image Processing Module inputs:
  - B174W Front View Camera - Windshield
  - B233B Forward Range Radar Sensor - Long Range

  - B233LF Short Range Radar Sensor - Left Front
  - B233RF Short Range Radar Sensor - Right Front
  - B233CR Short Range Radar Sensor - Rear Middle
  - B233SL Short Range Radar Sensor - Left Rear Side
  - B233SR Short Range Radar Sensor - Right Rear Side
  - K182 Parking Assist Control Module
  - Multi-axis acceleration sensor
  - Steering wheel angle sensor
  - Wheel speed sensors
  - Forward collision alert switch
  - Lane departure warning switch
  - Parking assist switch
- K124 Image Processing Module outputs:
  - K9 Body Control Module
  - K160 Brake System Control Module
  - K16 Battery Energy Control Module
  - K107 Drive Motor Control Module
  - P16 Instrument Panel Cluster Control Module
  - P29 Head-Up Display
  - K40D Driver Seat Adjuster Memory Module
  - Lane keep assist switch indicator
  - Parking assist switch indicator
  - Infotainment system

**B174W Front View Camera - Windshield**
The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detects lane markings and objects directly ahead, within a distance of approximately 60 meters (197 ft). The B174W Front View Camera - Windshield is used for lane keep assist and forward collision alert systems. The B174W Front View Camera - Windshield communicates with the K124 Image Processing Module on CAN 8.

Using information from the B174W Front View Camera - Windshield, the K124 Image Processing Module will provide forward collision alert and lane keep assist to the driver when appropriate. The alerts and warnings can be user-selected to be audible through the audio system or haptic using the active safety seat.

**B233B Forward Range Radar Sensor - Long Range**
The B233B Forward Range Radar Sensor - Long Range is located behind the front grille emblem and is used in the 30–200 m (98–656 ft) range. The B233B Forward Range Radar Sensor - Long Range communicates with the K124 Image Processing Module on CAN 8. In addition to the wiring harness ground, the module is grounded through the mounting bracket.

**B233LF Short Range Radar Sensor - Left Front and B233RF Short Range Radar Sensor - Right Front**
The B233LF Short Range Radar Sensor - Left Front and B233RF Short Range Radar Sensor - Right Front are located behind the front fascia that detect objects up to approximately 30 meters (98 ft). The B233LF Short Range Radar Sensor - Left Front and B233RF Short Range Radar Sensor - Right Front communicates with the K124 Image Processing Module on CAN 8.

**B233LR Short Range Radar Sensor - Left Rear and B233RR Short Range Radar Sensor - Right Rear**
B233LR Short Range Radar Sensor - Left Rear and B233RR Short Range Radar Sensor - Right Rear are located behind the rear fascia and detects objects up to approximately 30 meters (98 ft). The B233LR Short Range Radar Sensor - Left Rear and B233RR Short Range Radar Sensor - Right Rear communicates with the K124 Image Processing Module on CAN 8.

**B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side**
B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side are located behind the rear fascia and detects objects up to approximately 30 meters (98 ft). The B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side communicates with the K124 Image Processing Module on CAN 8.

**K182 Parking Assist Control Module**
The K182 Parking Assist Control Module uses ultrasonic object sensors located in the fascias to provide distance measurements to nearby objects. The K182 Parking Assist Control Module communicates with the K124 Image Processing Module on CAN 1.

**K160 Brake System Control Module**
The K160 Brake System Control Module performs the braking activities of the active safety system. When requested by the K124 Image Processing Module, the K160 Brake System Control Module will prepare or apply the brakes as necessary in response to an imminent collision.

## Active Safety System Operation

**Forward Collision Alert**
The forward collision alert system is a convenience feature of the K124 Image Processing Module, B174W Front View Camera - Windshield, B233B Forward Range Radar Sensor - Long Range, B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front that issues a warning to the driver when a potential collision risk exists. When the system detects a vehicle in the path

ahead, the green vehicle ahead indicator is illuminated on the P16 Instrument Panel Cluster Control Module. If the vehicle ahead is being followed too closely, the vehicle ahead indicator will be amber. When approaching another vehicle too rapidly, the P43 Forward Collision Alert Display (without UV6) or collision alert symbol in the P29 Head-Up Display (with UV6) will flash. An audible alert sound will simultaneously sound or the safety alert seat will provide haptic feedback. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus. Refer to the vehicle owner manual for more detailed information on vehicle personalization.

Forward collision alert does not provide a warning to help avoid a crash unless it detects a vehicle. Forward collision alert may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

Forward collision alert may provide unnecessary alerts for turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

**Automatic Emergency Braking**

Automatic emergency braking system uses the K124 Image Processing Module, B174W Front View Camera - Windshield, B233B Forward Range Radar Sensor - Long Range, B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front to determine if an imminent collision risk exists. If the brakes have not been applied, the system will automatically apply the brakes in an effort to mitigate the collision or reduce collision damage. The system has a detection range of approximately 60 m (197 ft) and will only function when a vehicle is detected, as indicated by the green vehicle ahead indicator is illuminated on the instrument cluster.

Automatic emergency braking is not a substitute for normal vehicle braking and should not be relied on to brake the vehicle. Automatic emergency braking may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

**Front Pedestrian Braking**

Front pedestrian braking system uses the K124 Image Processing Module, B174W Front View Camera - Windshield, B233B Forward Range Radar Sensor - Long Range, B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front to determine if an imminent collision risk exists with a nearby pedestrian. If the brakes have not been applied, the system will automatically apply the brakes in an effort to avoid or reduce the harm caused by front-end crashes with nearby pedestrians. The system has a detection range of approximately 40 m (131 ft) and will only function when a pedestrian is detected, as indicated by the amber pedestrian detected indicator illuminated on the instrument cluster.

Front pedestrian braking is not a substitute for normal vehicle braking and should not be relied on to brake the vehicle. Front pedestrian braking may not detect a pedestrian if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a pedestrian on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

**Backing Warning**

The backing warning system utilized the K124 Image Processing Module, B233LR Short Range Radar Sensor - Left Rear, B233RR Short Range Radar Sensor - Right Rear, B233SL Short Range Radar Sensor - Left Rear Side, B233SR Short Range Radar Sensor - Left Rear Side, and the K182 Parking Assist Control Module to warn of rear objects when backing up at speeds greater than 8 km/h (5 mph). Utilizing the ultrasonic rear object sensors, the K182 Parking Assist Control Module can only detect object at seeps up to 8 km/h (5 mph). By utilizing the K124 Image Processing Module and B233CR Short Range Radar Sensor - Rear Middle, along with the K182 Parking Assist Control Module and the rear object sensors, object can be detected at speeds greater than 8 km/h (5 mph).

While reversing at speeds greater than 8 km/h (5 mph), the backing warning system will alert the driver with an audible alert or through haptic feedback from the safety alert seat when an object is first detected. If the system detects a potential collision risk, a series of audible beeps or haptic feedback pulses will be provided, as well as a quick pulse of the brakes.

**Reverse Automatic Braking**

The rear automatic braking system is designed to help avoid or reduce the harm caused by backing crashes. If the system detects the vehicle is backing too fast to avoid a collision, it may automatically brake hard to a stop.

Utilizing the K124 Image Processing Module, B233LR Short Range Radar Sensor - Left Rear, B233RR Short Range Radar Sensor - Right Rear, B233SL Short Range Radar Sensor - Left Rear Side, B233SR Short Range Radar Sensor - Left Rear Side, and the K182 Parking Assist Control Module, rear automatic braking attempts to avoid imminent collision by automatically braking the vehicle when traveling in reverse. In conjunction with the backing warning system, if the driver does not respond to the audible and haptic alerts while reversing, the system will automatically brake the vehicle to a stop.

Rear automatic braking also prevents the vehicle from backing into an object if the vehicle is stopped and shifted to R. If the system detects an object immediately behind the vehicle while attempting to reverse from a stop, the brakes will be applied.

Pressing the brake pedal after the vehicle comes to a stop will release the rear automatic braking. It may be necessary to release the electronic parking brake. When it is safe to do so, pressing the accelerator pedal firmly at any time will override the rear automatic braking. If rear automatic braking is active and there is no object behind the vehicle, make sure there is no snow, ice, or debris on the rear object sensors.

**Lane Keep Assist**
The lane keep assist system is a convenience feature that utilizes the B174W Front View Camera - Windshield and K124 Image Processing Module to determine if the vehicle has unintentionally crossed a lane marking and issue a warning. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. When the vehicle unintentionally leaves a detected lane, visual and audible or haptic alerts are given to the driver. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus.

Refer to *Lane Keep Assist Description and Operation 11-30* for more information about the Lane Keep Assist function.

## Active Safety System Description and Operation (without UKL)

### Front View Camera Module – Windshield

For vehicles that don't have Super Cruise there is no K124 Image Processing Module use on the vehicle. The B174W Front View Camera – Windshield Module controls the Active Safety components in vehicles that don't have Super Cruise. The Adaptive Cruise Control history buffers will be located in the B174W Front View Camera – Windshield Module in the Scan Tool.

The active safety system is a comprehensive feature set designed to help a driver avoid collisions or reduce crash damage while driving, backing, and parking. The B174W Front View Camera - Windshield Module is the primary controller for the active safety system. The B174W Front View Camera - Windshield Module communicates on multiple serial data busses to share information with various control modules throughout the vehicle. The B174W Front View Camera - Windshield Module uses various sensors and control modules to monitor the vehicle surroundings and take deliberate action to avoid collisions or reduce crash damage. The active safety system tightly integrates the forward collision alert, adaptive cruise control, parking assist, and active emergency braking systems into a single cohesive system.

**Note:** Depending on vehicle option content, not all vehicles will have all the components described below.

The B174W Front View Camera - Windshield Module communicates via serial data with the B233B Forward Range Radar Sensor - Long Range, B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front to create a virtual fusion image of the area in front of the vehicle. The B174W Front View Camera - Windshield Module observes an actual visual image of the area directly ahead of the vehicle, within 60 m (197 ft), with the B174W Front View Camera - Windshield. The B233B Forward Range Radar Sensor - Long Range is used to measure the distance to objects that are up to 200 m (656 ft) in front the vehicle and the B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front are used to measure the distance to objects that are within 30 m (98 ft) of the front of the vehicle. Within 60 m (197 ft) of the vehicle, all of these inputs are combined to create a fusion image of the area in front of the vehicle. At up to 200 m (656 ft), the B233B Forward Range Radar Sensor - Long Range will detect and begin tracking objects immediately in front of the vehicle. Within 60 m (197 ft), the B174W Front View Camera - Windshield will confirm objects that have been detected by the B233B Forward Range Radar Sensor - Long Range. The B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front improve cut-in detection, which are objects that enter the vehicle path from the side and are not necessarily detected by the B174W Front View Camera - Windshield and B233B Forward Range Radar Sensor - Long Range, who’s focus are those object directly in front of the vehicle.

The fusion image created by the B174W Front View Camera - Windshield Module is used to detect collision risks and take action based on the immediacy of the risk. If a collision risk exists, the B174W Front View Camera - Windshield Module will alert the driver using the forward collision alert system. This will provide the driver with a visual and audible or haptic alert that a collision risk has been detected. If the driver does not take action to reduce the risk of collision, such as changing lanes or applying the brakes, the intelligent brake assist system will pre-fill the brake hydraulic system to reduce system response time and increase pressure when quickly applying the brakes. If a collision risk is imminent, the B174W Front View Camera - Windshield Module will enter automatic collision preparation, which will automatically apply the brakes in an effort to mitigate the collision or reduce collision damage.

The B174W Front View Camera - Windshield Module communicates with the steering angle sensor (part of the K43 Power Steering Control Module) and the multi-axis acceleration sensor (part of the K36 Restraints Control Module) on CAN 1. These sensors are used to determine the intended vehicle path. Using the steering data and vehicle acceleration data, the B174W Front View Camera - Windshield Module will determine where the vehicle will be traveling and focus attention on objects in this path. An example would be a driver quickly changing lanes to avoid a collision. This would mitigate the collision risk in the previous lane and theB174W Front View Camera - Windshield Module would quickly transition to tracking objects for any collision risk in the new lane based on intended vehicle path. B174W Front View Camera - Windshield Module also communicates with the K160 Brake System Control Module to instigate the braking functions of intelligent brake assist and automatic collision preparation.

At the rear of the vehicle, the B174W Front View Camera - Windshield Module uses the B233LR Short Range Radar Sensor - Left Rear, B233RR Short Range Radar Sensor - Right Rear, B233SL Short Range Radar Sensor - Left Rear Side, B233SR Short Range Radar Sensor - Right Rear Side, and the K182 Parking Assist Control Module as part of the backing warning system and the rear automatic braking system. Typical rear parking assist utilizes the K182 Parking Assist Control Module and the four ultrasonic rear parking assist sensors to detect object when reversing at speed of up to 8 km/h (5 mph). The backing warning systems utilizes both the four ultrasonic rear parking assist sensors, as well as the B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side to detect object at speeds above 8 km/h (5 mph). The rear automatic braking system is intended to help avoid or reduce the harm caused by backing crashes or prevent the vehicle from being from being reversed into an object if the vehicle is already stopped.

**The Active Safety System analyzes data from the various control modules and sensors listed below:**

- B174W Front View Camera - Windshield Module
- B233B Forward Range Radar Sensor - Long Range
- B233LF Short Range Radar Sensor - Left Front
- B233RF Short Range Radar Sensor - Right Front
- B233LR Short Range Radar Sensor - Left Rear
- B233RR Short Range Radar Sensor - Right Rear
- B233SL Short Range Radar Sensor - Left Rear Side
- B233SR Short Range Radar Sensor - Right Rear Side
- K182 Parking Assist Control Module
- K160 Brake System Control Module

## Component Description

**Note:** Depending on vehicle option content, not all vehicles will have all the components described below.

**B174W Front View Camera - Windshield Module**
The vehicle analyzes data from various modules, sensors, and switches to provide enhanced safety features. In addition to providing alerts, the B174W Front View Camera - Windshield Module will provide driver assistance through integrated brake assist, automatic collision preparation, rear emergency braking, and adaptive cruise control. Inputs and outputs can either be connected directly to the B174W Front View Camera - Windshield Module or communicate though serial data.

Forward collision alert, lane departure warning, and park assist alerts can be user selected to either a haptic signal utilizing the driver’s haptic signal motor seat or using beeps through the audio system. This setting can be found in the vehicle personalization menus. See the owner’s manual for more detailed information on vehicle personalization.

If there is a DTC set in any of the modules that the B174W Front View Camera - Windshield Module uses as inputs, it will send a “Service Driver Assist” to the instrument cluster to alert the driver of a problem with the system. No other specific details are given unless the driver attempts to activate a specific system. For example if the driver attempts to turn on lane departure warning, the instrument cluster will display “Lane Departure Unavailable” and the indictor will flash and then go out. A scan tool must be used to read the DTCs that are causing the malfunction to help find the problem. Some of the inputs to the B174W Front View Camera - Windshield Module can affect forward facing features, rear facing features, or all features. Systems to check to determine which area to focus are rear park assist for rear features, and lane departure warning and adaptive cruise control for front features. If none of the active safety system features are operative, there may be an issue with another module on the vehicle not providing the proper data to the B174W Front View Camera - Windshield Module. If all B174W Front View Camera - Windshield Module features are inoperative, check the Adaptive Cruise Control Disable History Data, Lane Keep Assist Disable History Data, and Front Impact Mitigation Disable History Data in the scan tool for the reason for the malfunction.

- B174W Front View Camera - Windshield Module inputs (when applicable):
  - B174W Front View Camera - Windshield
  - B233B Forward Range Radar Sensor - Long Range
  - B233LF Short Range Radar Sensor - Left Front
  - B233RF Short Range Radar Sensor - Right Front
  - B233CR Short Range Radar Sensor - Rear Middle
  - B233R Short Range Radar Sensor - Rear
  - B233SL Short Range Radar Sensor - Left Rear Side
  - B233SR Short Range Radar Sensor - Right Rear Side
  - K182 Parking Assist Control Module
  - Multi-axis acceleration sensor
  - Steering wheel angle sensor
  - Wheel speed sensors
  - Forward collision alert switch
  - Lane departure warning switch
  - Parking assist switch
- B174W Front View Camera - Windshield Module outputs:
  - K9 Body Control Module
  - K160 Brake System Control Module
  - K16 Battery Energy Control Module
  - K107 Drive Motor Control Module
  - P16 Instrument Panel Cluster Control Module
  - P29 Head-Up Display
  - K40D Driver Seat Adjuster Memory Module
  - Lane keep assist switch indicator
  - Parking assist switch indicator
  - Infotainment system

**B174W Front View Camera - Windshield**
The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detects lane markings and objects directly ahead, within a distance of approximately 60 meters (197 ft). The B174W Front View Camera - Windshield is used for lane keep assist and forward collision alert systems.

**B233B Forward Range Radar Sensor - Long Range**
The B233B Forward Range Radar Sensor - Long Range is located behind the front grille emblem and is used in the 30–200 m (98–656 ft) range. The B233B Forward Range Radar Sensor - Long Range communicates with the B174W Front View Camera - Windshield Module. In addition to the wiring harness ground, the module is grounded through the mounting bracket.

**B233LF Short Range Radar Sensor - Left Front and B233RF Short Range Radar Sensor - Right Front**
The B233LF Short Range Radar Sensor - Left Front and B233RF Short Range Radar Sensor - Right Front are located behind the front fascia that detect objects up to approximately 30 meters (98 ft). The B233LF Short Range Radar Sensor - Left Front and B233RF Short Range Radar Sensor - Right Front communicates with the B174W Front View Camera - Windshield Module.

**B233R Short Range Radar Sensor - Rear**
B233R Short Range Radar Sensor - Rear is located behind the rear fascia and detects objects up to approximately 30 meters (98 ft). The B233R Short Range Radar Sensor - Rear communicates with the B174W Front View Camera - Windshield Module.

**B233LR Short Range Radar Sensor - Left Rear and B233RR Short Range Radar Sensor - Right Rear**
B233LR Short Range Radar Sensor - Left Rear and B233RR Short Range Radar Sensor - Right Rear are located behind the rear fascia and detects objects up to approximately 30 meters (98 ft). The B233LR Short Range Radar Sensor - Left Rear and B233RR Short

Range Radar Sensor - Right Rear communicates with the B174W Front View Camera - Windshield Module.

**B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side**
B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side are located behind the rear fascia and detects objects up to approximately 30 meters (98 ft). The B233SL Short Range Radar Sensor - Left Rear Side and B233SR Short Range Radar Sensor - Right Rear Side communicates with the B174W Front View Camera - Windshield Module.

**K182 Parking Assist Control Module**
The K182 Parking Assist Control Module uses ultrasonic object sensors located in the fascias to provide distance measurements to nearby objects. The K182 Parking Assist Control Module communicates with the B174W Front View Camera - Windshield Module.

**K160 Brake System Control Module**
The K160 Brake System Control Module performs the braking activities of the active safety system. When requested by the B174W Front View Camera – Windshield Module, the K160 Brake System Control Module will prepare or apply the brakes as necessary in response to an imminent collision.

## Active Safety System Operation

### Forward Collision Alert

The forward collision alert system is a convenience feature of the B174W Front View Camera - Windshield Module, B233B Forward Range Radar Sensor - Long Range (with UGN/UVZ), B233LF Short Range Radar Sensor - Left Front (with UGN/UVZ), and B233RF Short Range Radar Sensor - Right Front (with UGN/UVZ) that issues a warning to the driver when a potential collision risk exists. When the system detects a vehicle in the path ahead, the green vehicle ahead indicator is illuminated on the P16 Instrument Panel Cluster Control Module. If the vehicle ahead is being followed too closely, the vehicle ahead indicator will be amber. When approaching another vehicle too rapidly, the P43 Forward Collision Alert Display (without UV6) or collision alert symbol in the P29 Head-Up Display (with UV6) will flash. An audible alert sound will simultaneously sound or the safety alert seat will provide haptic feedback. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus. Refer to the vehicle owner manual for more detailed information on vehicle personalization.

Forward collision alert does not provide a warning to help avoid a crash unless it detects a vehicle. Forward collision alert may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

Forward collision alert may provide unnecessary alerts for turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

### Automatic Emergency Braking

Automatic emergency braking system uses the B174W Front View Camera - Windshield Module, B233B Forward Range Radar Sensor - Long Range (with UGN/UVZ), B233LF Short Range Radar Sensor - Left Front, and B233RF Short Range Radar Sensor - Right Front (with UGN/UVZ) to determine if an imminent collision risk exists. If the brakes have not been applied, the system will automatically apply the brakes in an effort to mitigate the collision or reduce collision damage. The system has a detection range of approximately 60 m (197 ft) and will only function when a vehicle is detected, as indicated by the green vehicle ahead indicator is illuminated on the instrument cluster.

Automatic emergency braking is not a substitute for normal vehicle braking and should not be relied on to brake the vehicle. Automatic emergency braking may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

### Front Pedestrian Braking

Front pedestrian braking system uses the B174W Front View Camera - Windshield Module, B233B Forward Range Radar Sensor - Long Range (with UGN/UVZ), B233LF Short Range Radar Sensor - Left Front (with UGN/UVZ), and B233RF Short Range Radar Sensor - Right Front (with UGN/UVZ) to determine if an imminent collision risk exists with a nearby pedestrian. If the brakes have not been applied, the system will automatically apply the brakes in an effort to avoid or reduce the harm caused by front-end crashes with nearby pedestrians. The system has a detection range of approximately 40 m (131 ft) and will only function when a pedestrian is detected, as indicated by the amber pedestrian detected indicator illuminated on the instrument cluster.

Front pedestrian braking is not a substitute for normal vehicle braking and should not be relied on to brake the vehicle. Front pedestrian braking may not detect a pedestrian if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a pedestrian on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

**Backing Warning**
The backing warning system utilizes the B174W Front View Camera - Windshield Module, B233LR Short Range Radar Sensor - Left Rear, B233RR Short Range Radar Sensor - Right Rear, B233SL Short Range Radar Sensor - Left Rear Side, B233SR Short Range Radar Sensor - Left Rear Side, and the K182 Parking Assist Control Module to warn of rear objects when backing up at speeds greater than 8 km/h (5 mph). If utilizing the ultrasonic rear object sensors alone, the K182 Parking Assist Control Module could only detect an object at speeds up to 8 km/h (5 mph).

While reversing at speeds greater than 8 km/h (5 mph), the backing warning system will alert the driver with an audible alert or through haptic feedback from the safety alert seat when an object is first detected. If the system detects a potential collision risk, a series of audible beeps or haptic feedback pulses will be provided, as well as a quick pulse of the brakes.

**Reverse Automatic Braking**
The rear automatic braking system is designed to help avoid or reduce the harm caused by backing crashes. If the system detects the vehicle is backing too fast to avoid a collision, it may automatically brake hard to a stop.

Utilizing the B174W Front View Camera - Windshield Module, B233LR Short Range Radar Sensor - Left Rear, B233RR Short Range Radar Sensor - Right Rear, B233SL Short Range Radar Sensor - Left Rear Side, B233SR Short Range Radar Sensor - Left Rear Side, and the K182 Parking Assist Control Module, rear automatic braking attempts to avoid imminent collision by automatically braking the vehicle when traveling in reverse. In conjunction with the backing warning system, if the driver does not respond to the audible and haptic alerts while reversing, the system will automatically brake the vehicle to a stop.

Rear automatic braking also prevents the vehicle from backing into an object if the vehicle is stopped and shifted to R. If the system detects an object immediately behind the vehicle while attempting to reverse from a stop, the brakes will be applied.

Pressing the brake pedal after the vehicle comes to a stop will release the rear automatic braking. It may be necessary to release the electronic parking brake.

When it is safe to do so, pressing the accelerator pedal firmly at any time will override the rear automatic braking. If rear automatic braking is active and there is no object behind the vehicle, make sure there is no snow, ice, or debris on the rear object sensors.

**Lane Keep Assist**
The lane keep assist system is a convenience feature that utilizes the B174W Front View Camera - Windshield Module to determine if the vehicle has unintentionally crossed a lane marking and issue a warning. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. When the vehicle unintentionally leaves a detected lane, visual and audible or haptic alerts are given to the driver. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus.

Refer to *Lane Keep Assist Description and Operation 11-30* for more information about the Lane Keep Assist function.

## Adaptive Cruise Control Description and Operation

The adaptive cruise control system is an enhanced cruise control system with the ability to sense and react to forward traffic. Compared to the common cruise control system found on many vehicles, the main functional enhancement of the adaptive cruise control system is the ability to detect the presence of a vehicle in the path of the adaptive cruise control vehicle. Adaptive cruise control retains the existing cruise control feature that controls the vehicle speed to the driver selected speed. However, adaptive cruise control allows a driver to set and maintain a following distance to the preceding nearest vehicle in the path ahead. The K124 Image Processing Module controller calculates a follow speed limit to ensure an acceptable distance is maintained to the preceding vehicle in front, should one be present. The adaptive cruise control system automatically adjusts the speed when the vehicle comes up behind a slower travelling vehicle in front. The system applies limited automatic braking and throttle control without driver input when necessary to maintain the set following distance. The preceding vehicle's speed and acceleration along with the active cruise control vehicle speed and acceleration and the distance between the two vehicles are factors used by the K124 Image Processing Module controller to determine the follow speed limit. The vehicle speeds up to the original driver selected set speed when the pathway becomes clear without driver input.

The adaptive cruise control functionality depends on various modules on the vehicle to function and each module performs a function that is critical to the proper operation of the adaptive cruise control system. Adaptive cruise control will not operate if any components fail. Communication between modules is via serial data. The following is a functional description of the K124 Image Processing Module and the other associated components:

- B233B Forward Radar Sensor Module - Long Range
- K9 Body Control Module
- K124 Image Processing Module
- K160 Brake System Control Module
- P16 Instrument Panel Cluster Control Module
- Cruise Control Switch
- Gap Switch

**K124 Image Processing Module**
The K124 Image Processing Module analyzes data from various modules, sensors, and switches to provide enhanced safety features. In addition to enhanced safety features, the K124 Image Processing Module provides the adaptive cruise control system functionality. The K124 Image Processing Module analyzes data from the B233B Forward Radar Sensor Module - Long Range to identify and classify objects in the road environment. The system scans the road environment to detect targets within its specified field of view. The K124 Image Processing Module then sends throttle and/or brake commands to the K107 Drive Motor Control Module and K160 Brake System Control Module via serial data in order to control the vehicle acceleration/deceleration based on the data from the modules. The K107 Drive Motor Control Module and K160 Brake System Control Module provide throttle control and automatic braking needed for proper cruise speed adjustment. The following is a list of the K124 Image Processing Module functions pertaining to the adaptive cruise control functionality:

- The K124 Image Processing Module processes the road environment to get data concerning any vehicle ahead of the adaptive cruise control vehicle. Detection, parameter estimation, tracking, object classification and diagnostics are the primary functions. When an object is detected, the controller calculates the object range, range rate, acceleration and azimuth angle parameters.
- The K124 Image Processing Module performs adaptive cruise control state processing automatically – distance control or speed control. The adaptive cruise control operates in two possible states – cruise or follow. The normal operating state is cruise, whereby the vehicle speed is controlled to match the driver selected set speed. When a preceding forward target is identified, the adaptive cruise control system will automatically transition into the follow speed state to provide proper lane spacing behind the target vehicle in front. The preceding vehicle's speed and acceleration, with the adaptive cruise control vehicle speed, acceleration and distance between the two vehicles will be used to determine the adaptive cruise control follow speed limit. The adaptive cruise control follow speed limit will ensure that an acceptable distance is maintained to the preceding vehicle.
- The K124 Image Processing Module determines the follow speed limit for throttle control by the K107 Drive Motor Control Module.
- The K124 Image Processing Module arbitrates the adaptive cruise control system brake and throttle control between the K160 Brake System Control Module and the K107 Drive Motor Control Module.
- The K124 Image Processing Module requests brake light activation during automatic braking.
- The K124 Image Processing Module provides operational feedback to the vehicle driver. The K124 Image Processing Module sends signals for telltales and messages to be displayed on the P16 Instrument Panel Cluster Control Module or driver information center.

**B233B Forward Radar Sensor Module - Long Range**
The B233B Forward Radar Sensor Module - Long Range is located behind the front fascia and is used in the 30–200 m (98–656 ft) range. The B233B Forward Radar Sensor Module - Long Range communicates with the K124 Image Processing Module via serial data on CAN 8. In addition to the wiring harness ground, the module is grounded through the mounting bracket.

**K9 Body Control Module**
The following are the adaptive cruise control system functions provided by the K9 Body Control Module:

- The K9 Body Control Module reads all cruise control switches and the gap switch. The K124 Image Processing Module monitors a variety of user operated switches from the K9 Body Control Module switch status information sent via CAN.
- The K9 Body Control Module illuminates the brake light based on a CAN message from the K124 Image Processing Module during automatic braking.
- The K9 Body Control Module measures the brake pedal position and sends brake pedal travel status via CAN to the K107 Drive Motor Control Module. The K107 Drive Motor Control Module disengages the adaptive cruise control system when the brake is applied by the driver pressing the brake pedal.

### K160 Brake System Control Module

The following are the adaptive cruise control System functions performed by the K160 Brake System Control Module:

- The K160 Brake System Control Module controls the operation of the Antilock Brake System.
- The K160 Brake System Control Module provides automatic braking for the adaptive cruise control system. The K124 Image Processing Module will request vehicle deceleration via high speed CAN serial data circuit.
- The K160 Brake System Control Module determines when the driver–applied brake pressure is active. The K160 Brake System Control Module will communicate this status via CAN to the K9 Body Control Module.
- The K160 Brake System Control Module releases vehicle automatic braking when there is a throttle override by the driver pressing the accelerator.
- The K160 Brake System Control Module predicts brake temperatures. Due to automatic braking, the brake system may overheat. When the brakes are overheated, the K160 Brake System Control Module requests the adaptive cruise control system to be temporarily shut down by the K107 Drive Motor Control Module until the brakes cool to a normal operating temperature.

### P16 Instrument Panel Cluster Control Module

The driver information center is a part of the P16 Instrument Panel Cluster Control Module and displays the adaptive cruise control system warning messages. The K124 Image Processing Module requests messages to be displayed on the driver information center by sending a CAN request to the P16 Instrument Panel Cluster Control Module requesting the display of the warning message. When the message is acknowledged by the driver and the cause of the message resolved, the driver information center turns the message off. The adaptive cruise control system will not operate if the driver information center fails.

### Cruise Control Switch

The cruise control switch, functionally is a common feature that is shared between the adaptive cruise control system and the regular cruise control system. The adaptive cruise control system will not operate if any cruise switch fails. The cruise control switch comprises the following cruise control function switches:

- On/Off switch
- Set/decrease switch
- Resume/increase switch

The cruise control function switches are arranged in a resistive ladder design whereby each switch function is set up with different resistance values. The K9 Body Control Module through the cruise control switch signal circuit detects a predetermined voltage value when any cruise control switch function is activated. The associated cruise control function signal detected by the K9 Body Control Module is then sent to the K107 Drive Motor Control Module as a CAN message. The K107 Drive Motor Control Module on receiving the message provides the cruise control function requested by the K9 Body Control Module. The K107 Drive Motor Control Module is responsible for recognizing and responding to cruise control switch requests sent by the K9 Body Control Module. The cruise control function switches are used by the K107 Drive Motor Control Module to communicate to the K124 Image Processing Module the driver selected vehicle speed. The driver selected vehicle speed is communicated through CAN serial data circuit to the K124 Image Processing Module and the K9 Body Control Module. The adaptive cruise control system engages and adjusts vehicle speeds based on the activation of the following cruise control function switches:

### Cruise Control On/Off Switch

The K9 Body Control Module monitors the switch signal circuit in order to determine when the On/Off switch is disabled or activated. The K9 Body Control Module detects a predetermined voltage value on the switch signal circuit. The On/Off switch state is then relayed to the K107 Drive Motor Control Module via CAN. The K107 Drive Motor Control Module sends the On/Off switch input status to the K124 Image Processing Module . When the On/Off switch is turned ON, the adaptive cruise control system enters either a standby enabled or a standby disabled mode. The standby enabled mode indicates that every condition required for the adaptive cruise control system to function has been met, but the adaptive cruise control is not engaged. When the adaptive cruise control is in the standby disabled mode, the conditions necessary for the adaptive cruise control system to function has not been met. When the On/Off switch is turned OFF, the adaptive cruise control will enter the disabled mode. The adaptive cruise control will not activate in the disabled mode.

### Cruise Control Set/Decrease Switch

The adaptive cruise control system is engaged when the adaptive cruise control On/Off switch is turned ON and the set/decrease switch is momentarily pressed and released . When the set/decrease switch is pressed, the selected vehicle speed is set to the current vehicle speed by the K107 Drive Motor Control Module. The vehicle speed must be at or greater than 40 km/h (25 MPH). The selected vehicle speed is displayed by the driver information center. While in the engaged state, the selected vehicle speed and the following distance can be adjusted. Pressing and holding the set/decrease switch, when the adaptive cruise control system is engaged, will decrease the selected vehicle speed without deactivating the adaptive cruise control. Momentarily pressing and releasing the set/decrease switch, when the adaptive cruise control is engaged, decreased the selected vehicle speed by 1.6 km/h (1 MPH) for each time that the set/decrease switch is pressed.

**Cruise Control Resume/Increase Switch**
The resume/increase switch is used in order to increase the selected vehicle speed when adaptive cruise control is active. The amount selected vehicle speed can be increased from the resume/increase switch depends on how long the switch is pressed. The presence of a slower moving vehicle in the path of the adaptive cruise control vehicle will limit the extent to which the selected vehicle speed can be achieved. If there is no preceding vehicle in front, limiting the adaptive cruise control vehicle acceleration, then the vehicle speed that is attained is the new selected vehicle speed. The current selected vehicle speed is displayed by the driver information center. Acceleration is terminated when the resume/increase switch is released. Momentarily pressing and releasing the resume/increase switch will allow the selected vehicle to accelerate in at 1.6 km/h (1 MPH) increments for each time that the resume/increase switch is momentarily pressed.

**Gap Switch**
The gap switch allows the driver to determine how closely the adaptive cruise control vehicle follows a target vehicle while adaptive cruise control is engaged. When the adaptive cruise control vehicle speed is being limited due to a slower travelling vehicle, the adaptive cruise control vehicle speed is automatically controlled to the follow speed limit. The gap switch has 3 following distance selections that range from 1–2 s. The gap switch following distance between the adaptive cruise control vehicle and the target vehicle is expressed in time as opposed to actual distance. The distance maintained for a selected gap will vary based on vehicle speed. The faster the vehicle speed, the further back you will follow. The gap setting can only be adjusted when the adaptive cruise control system is engaged. The gap switch is hard-wired to the K9 Body Control Module. Based on voltage variations, the K9 Body Control Module is able to read the gap switch selection and communicates the switch status via CAN to the K124 Image Processing Module . The gap switch is a momentary switch.

The initial push of the gap switch recalls the current setting and activates the display. Subsequent pushes of the gap switch will change the gap setting.

### Driver Information Messages

**Adaptive Cruise Control Temporarily Unavailable**
The K124 Image Processing Module will send this message if the adaptive cruise control has been disengage or disabled. There are many reasons that can cause this, some will also set DTCs. Check vehicle for DTCs and also check the adaptive cruise control enable and disengage scan tool data. Definitions of parameters can be found in K124 Image Processing Module scan tool information.

**Service Driver Assist System**
This message can be set by either the K124 Image Processing Module if there is a problem with the driver assist system or by the memory seat module if there is a problem with the haptic seat circuits. Check vehicle for DTCs.

**Service Adaptive Cruise Control and Service Front Camera**
The message is set if the K124 Image Processing Module is not communicating to the P16 Instrument Cluster . Check vehicle for DTCs.

**Set Speed**
The adaptive cruise control vehicle set speed is displayed at all times in the driver information center when adaptive cruise control is engaged. The K124 Image Processing Module set speed display request is sent to the P16 Instrument Cluster via the CAN serial data circuit.

**Follow Distance**
The driver information center displays the driver selected following distance when adaptive cruise control is engaged and the gap switch is active. The current follow distance setting is displayed in the driver information center for a few seconds after the gap switch is pressed to increase or decrease the following distance. The K124 Image Processing Module follow distance display request is sent to the P16 Instrument Cluster via the CAN serial data circuit.

**Vehicle Ahead Indicator**
The vehicle ahead indicator is displayed in the P16 Instrument Cluster hen the radar identifies an in-path vehicle. The vehicle ahead indicator is a warning to the driver that a vehicle is ahead. The indicator also serves as a feedback to the driver that the radar is functioning properly. The K124 Image Processing Module commands the display of the vehicle ahead indicator via a CAN serial data message to the P16 Instrument Cluster . The vehicle ahead indicator only displays with the adaptive cruise control active and may sometimes display for stationary road objects.

## Adaptive Cruise Control Operation

Adaptive cruise control uses the K124 Image Processing Module and B233B Forward Radar Sensor Module - Long Range, which looks directly ahead to monitor vehicles that a driver is following. Adaptive cruise control helps drivers follow a vehicle ahead at the following gap they select — Far, Medium or Near — while they steer. This reduces the driver's need to frequently brake and accelerate.

If the system does not detect a vehicle ahead, adaptive cruise control will resort to traditional cruise control operation. When the system detects a vehicle ahead in the driving lane, the vehicle ahead icon will appear in green on the P16 Instrument Panel Cluster Control Module. When the vehicle detected ahead is within the selected following gap setting, adaptive cruise control can automatically slow the vehicle down and adjust vehicle speed to follow the vehicle ahead at the selected following gap. Like regular cruise control, adaptive cruise control uses ON/OFF, CANCEL, SET and RESUME buttons on the steering wheel.

Getting started:

- To turn adaptive cruise control on, the driver should press the cruise control ON/OFF button.
- When the system is turned on, the driver information center in the P16 Instrument Panel Cluster Control Module will show a white adaptive cruise control icon.
- To choose a cruise speed, the driver should press the SET button while driving at the desired speed. The white adaptive cruise control icon will change to green, indicating that adaptive cruise control is engaged.
- The adaptive cruise control gap switch on the steering wheel lets drivers select a Far, Medium or Near following gap between their vehicle and the vehicle ahead. Both adaptive cruise control i and forward collision alert are set at the same setting.

Adaptive cruise control can follow a vehicle ahead to a stop. When the vehicle ahead starts moving again, the driver should check that it is safe to proceed, then continue to automatically follow the vehicle ahead by pressing the accelerator or resume button. If the driver doesn't respond soon after the stop, the vehicle ahead icon will flash. In addition, an audible notification will sound, or if equipped, the safety alert seat will pulse to remind the driver to check traffic ahead before proceeding.

If the adaptive cruise control is controlling speed and detects that the vehicle is approaching a vehicle ahead too quickly and adaptive cruise control cannot apply sufficient braking, such as when vehicles ahead suddenly slow or stop, drivers will receive a forward collision alert to warn them to quickly take action. This alert includes a red flashing visual alert, an audible notification, or, if equipped, the safety alert seat will pulse.

If the driver uses the accelerator pedal while adaptive cruise control is active, a driver information center warning message will indicate that automatic braking will not occur. In some vehicles, instead of the message, the green adaptive cruise control icon will change to blue.

Switching between cruise control modes (if available):

- The driver should press and hold the cruise control CANCEL button.
- The driver will see either the adaptive cruise control icon or the regular cruise control icon on the driver information center. This icon indicates which cruise control mode has been selected.
- Drivers should check which cruise control icon is displayed before setting their cruise control speed.

The driver can end adaptive cruise control by doing any of the following:

- Stepping lightly on the brake pedal
- Pressing the cruise control CANCEL button
- Pressing the cruise control ON/OFF button

## Adaptive Cruise Control Operational Checks

### Safety Considerations

- The system can only apply limited braking. The driver's complete attention is always required while driving
- The system may not react to parked, stopped or slow-moving vehicles; the driver should always be ready to take action and apply the brakes
- Driver should not use adaptive cruise control on winding or hilly roads, on freeway exit or entrance ramps or when trailering. In these driving conditions, the system may not detect the vehicle ahead
- The system cannot detect traffic lights or traffic signs, so the driver needs to safely brake accordingly whenever approaching an intersection with a traffic light or stop sign
- If no vehicle ahead is detected, adaptive cruise control will work like regular cruise control
- When using adaptive cruise control, the driver should keep in mind that the system is designed to

follow detected vehicles ahead at a longer distance when traveling at higher speeds than at lower speeds

- To avoid using adaptive cruise control by accident, advise customers to keep the cruise control button off when they don’t need it. They should press the ON/OFF button and verify that the adaptive cruise control icon is not lit

Adaptive cruise control may have difficulty detecting the following objects:

- Vehicles in front of the driver’s vehicle that have a rear aspect that is low, small or irregular
- A truck or trailer that has no cargo in the cargo bed
- Vehicles with cargo extending from the back end
- Non-standard shaped vehicles, such as vehicle transport, vehicles with a sidecar or horse carriages
- Vehicles that are low to the road surface
- Objects that are close to the front of the driver’s vehicle

Weather conditions can affect adaptive cruise control:

- If the vehicle’s interior temperature is extremely high, the P16 Instrument Panel Cluster Control Module may indicate that adaptive cruise control is temporarily unavailable. This can be caused by extreme hot weather conditions. Adaptive cruise control will return to normal operation once the ambient is cooler
- Conditions that are associated with low visibility, such as rain, snow or road spray, may limit the performance of adaptive cruise control.

## Forward Collision Alert Description and Operation (without UGN)

### Forward Collision Alert (UEU)

The forward collision alert system is a convenience feature of the B174W Front View Camera - Windshield that can warn drivers of a possible front-end collision situation with a vehicle they are following. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting vehicles directly ahead. When a vehicle is detected ahead, a green icon is displayed. This indicator will turn amber if the driver is following too closely. If the system detects that the driver is seconds away from a possible front-end collision, it sends an alert. The P43 Forward Collision Alert Display, which includes a series of red collision alert LEDs, will flash. An audible alert sound will simultaneously sound. If the vehicle is equipped with safety alert seat (HS1), both sides of the seat will pulse. The forward collision alert system can be set to "far," "medium," or "near" timing using the forward collision alert switch and can be turned off using this control or through the vehicle personalization.

Forward collision alert does not provide a warning to help avoid a crash unless it detects a vehicle. Forward collision alert may not detect a vehicle ahead if the B174W Front View Camera - Windshield is blocked by dirt, snow, or ice, or if the windshield is damaged. It may also not detect a vehicle on winding or hilly roads, or in conditions that can limit visibility such as fog, rain, or snow, or if the headlamps or windshield are not cleaned or in proper condition. Keep the windshield, headlamps, and B174W Front View Camera - Windshield area clean and in good repair.

Forward collision alert may provide unnecessary alerts for turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

### Forward Automatic Braking (UHY)

Forward automatic braking detects vehicles ahead in your path that are traveling in the same direction and may help reduce crash severity or avoid the crash altogether by applying the brakes automatically or enhancing the driver’s braking in some emergency front-end collision situations . It can provide braking assist, such as brake system pre-fill, or automatically brake the vehicle if an imminent collision is determined. This can help avoid or lessen the severity of crashes when driving in a forward gear. Depending on the situation, the vehicle may automatically brake moderately or hard. Forward automatic braking can only occur if a vehicle is detected. When a vehicle is detected ahead, a green icon is displayed. The forward automatic braking system works when driving in a forward gear between 8 km/h (5 mph) and 60 km/h (37 mph). It can detect vehicles up to approximately 60 m (197 ft) away.

If the system detects that the driver is seconds away from a possible front-end collision with the vehicle it is following, it will first send an alert. If the driver doesn’t respond quickly or the situation happens suddenly, forward automatic braking enhances the driver’s braking or automatically applies the brakes. Drivers can override automatic braking at any time by pressing the accelerator or by braking. If the system slows a vehicle to a complete stop, the electronic parking brake will apply. The electronic parking brake can be release in typical fashion by pressing the electronic parking brake switch.

Through vehicle personalization, the forward automatic braking can be been set to the ALERT setting or turned completely off. This setting disables most automatic braking. The driver information center will display FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PREP REDUCED. This is normal operation when the forward automatic braking or forward collision alert system is set to OFF or ALERT. This message is not present when the forward automatic braking or forward collision alert system are set to ALERT and BRAKE.

## Forward Collision Alert/Forward Automatic Braking Components

- B174W Front View Camera - Windshield
- P16 Instrument Panel Cluster Control Module
- P43 Forward Collision Alert Display (without UV6)
- P29 Head-Up Display (with UV6)
- Forward Collision Alert Switch
- Infotainment System
- Safety Alert Seat (with HS1)

**B174W Front View Camera - Windshield**
The B174W Front View Camera - Windshield detects vehicles in front of the vehicle. The B174W Front View Camera - Windshield communicates with the P16 Instrument Cluster via serial data to illuminate the appropriate amber or green vehicle ahead indicator or P43 Forward Collision Alert Display. The B174W Front View Camera - Windshield also communicates via serial data with the infotainment system to request audible alerts.

**P16 Instrument Panel Cluster Control Module**
The P16 Instrument Panel Cluster Control Module communicates via serial data with the B174W Front View Camera - Windshield and will illuminate the amber or green vehicle ahead indicator as requested by the B174W Front View Camera - Windshield. The P16 Instrument Panel Cluster Control Module also controls the P43 Forward Collision Alert Display.

**P43 Forward Collision Alert Display (without UV6)**
The P43 Forward Collision Alert Display are a series of red LEDs that will flash when approaching another vehicle too rapidly. The P43 Forward Collision Alert Display are located in the upper instrument panel area and reflect off the windshield when illuminated.

The P43 Forward Collision Alert Display receive power and ground and are discretely controlled by the P16 Instrument Cluster through a pair of low control circuits. When requested by the B174W Front View Camera - Windshield, the P16 Instrument Cluster will pulse the low control circuits, flashing the LEDs as a visual alert that another vehicle is being approached too rapidly.

**P29 Head-Up Display (with UV6)**
The P16 Instrument Cluster controls the P29 Head-Up Display via serial data. The P16 Instrument Cluster will command the P29 Head-Up Display to flash the collision alert indicator as a visual alert when approaching another vehicle too rapidly as requested by the B174W Front View Camera - Windshield.

**Forward Collision Alert Switch**
The forward collision alert switch provides an input to the B174W Front View Camera - Windshield to select the alert timing sensitivity when approaching another vehicle too rapidly. The forward collision alert switch is part of the S70L Cruise Control Switch and provides inputs to the K9 Body Control Module, which then communicates with the B174W Front View Camera - Windshield via serial data.

The K9 Body Control Module applies voltage and monitors a low signal voltage from the normally open switch. When the switch is pressed, the signal circuit is pulled low through a specific series of resistors, indicating that the system has been requested to change the alert timing sensitivity. The first button press will show the current alert timing setting on the driver information center. With every subsequent button press, the alert timing sensitivity is changed.

**Infotainment System**
The infotainment system controls the audible alerts for the forward collision alert system. If the vehicle is approaching another vehicle too rapidly, the B174W Front View Camera - Windshield will command the infotainment system issue an audible alert to the driver.

**Safety Alert Seat (with HS1)**
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle is approaching another vehicle too quickly, the B174W Front View Camera - Windshield will command the control module to pulse both sides of the seat.

## Forward Collision Alert and Forward Automatic Braking Operational Checks

If the forward collision alert system is off, inoperative, or not functioning, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization. Vehicle personalization allows the system to be set to “Off,” “Beeps,” ”Alert,” “Safety Alert Seat,” or “Alert & Brake”.
- Attempt to replicate the customer concern. While driving, if the vehicle-ahead telltale display illuminates green when following a vehicle above 8 km/h (5 mph) , forward collision alert is operating properly.

If the driver is receiving false forward collision alerts, check the following:

- Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.

- The system may be identifying vehicles farther ahead than the customer is expecting. Forward collision alert detects vehicles within a distance of approximately 60 m (197 ft) and operates at speeds above 8 km/h (5 mph).
- Forward collision alert may provide unnecessary alerts to turning vehicles, vehicles in other lanes, objects that are not vehicles, or shadows. These alerts are normal operation and the vehicle does not need service.

If forward collision alert beeps, but the seat does not vibrate, check the following:

- Verify the vehicle is equipped with safety alert seat (RPO HS1).
- Verify there are no active driver information center messages and that no DTCs are set.
- Verify that the system is enabled through vehicle personalization: It may be set to “Beeps” or “Alert Only” instead of “Safety Alert Seat” or “Alert & Brake”.

If FORWARD COLLISION SYSTEM REDUCED or AUTOMATIC COLLISION PRE REDUCED is displayed on the driver information center, check the following:

- Verify that the system is enabled through vehicle personalization: It may be set to “Alert Only” instead of ”Off” or Alert & Brake”.

If SERVICE FRONT CAMERA is displayed on the driver information center, check the following:

- Verify there are no active driver information center messages and that no DTCs are set.
- If the message is only displayed upon startup, check the following:
  - Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.
  - Verify the vehicle is not parked closed to a wall or the B174W Front View Camera - Windshield is not in an over-temperature condition, such as sitting for long periods in high ambient temperatures and direct sun.
- If the message is displayed beyond startup, check the following:
  - Verify there are no active driver information center messages and that no DTCs are set.

If FRONT CAMERA IS BLOCKED is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify the B174W Front View Camera - Windshield is not blocked by dirt, snow, or ice, and the windshield is not damaged.

If SERVICE DRIVER ASSIST is displayed on the driver information center, check the following:

- Check for any other driver information center service messages.
- Verify there are no active driver information center messages and that no DTCs are set.

## Forward Collision Alert Description and Operation (with UGN)

On vehicles equipped with RPO UGN, forward collision alert is an integrated of the active safety system. Refer to *Active Safety System Description and Operation (with UKL) 11-15* *Active Safety System Description and Operation (without UKL) 11-19*.

## Lane Keep Assist Description and Operation

The lane keep assist system is a convenience feature that utilizes the B174W Front View Camera - Windshield maintains the vehicle location between identified lane markings. The B174W Front View Camera - Windshield is located behind the windshield, looking out at the road ahead and detecting any lane markings. If the vehicle begins to approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. An integrated function of lane keep assist is lane departure warning. When the vehicle unintentionally leaves a detected lane, visual and audible or haptic (if equipped) alerts are given to the driver. The visual alert cannot be changed, but the driver can select between audible or haptic alerts in the vehicle personalization menus.

## Lane Keep Assist System Components

The lane keep assist system is made up of the following components:

- B174W Front View Camera - Windshield
- Driver Information Display
- Multi-axis acceleration sensor (part of the K36 Restraints Control Module)
- Steering wheel angle sensor (part of the K43 Power Steering Control Module)
- K43 Power Steering Control Module
- Lane keep assist switch
- Infotainment system
- Safety alert seat (with HS1)

### B174W Front View Camera - Windshield

The B174W Front View Camera - Windshield detects visual queues such as lane markings. When it is determined that the vehicle is approach an identified lane marking, automatic correction will be applied by the electric power steering to move the vehicle back toward the center the lane. Using the multi-axis acceleration sensor and steering wheel angle sensor, the B174W Front View Camera - Windshield determines the vehicles path and compares this to it's own intended path based on lane markings. The B174W Front View Camera - Windshield will then request the K43 Power Steering Control Module to perform the appropriate steering correction. The B174W Front View Camera - Windshield receives an input via serial data from the lane keep assist switch and controls the lane keep assist switch indicator output.

**Driver Information Display**
Based on vehicle configuration, the P53 Driver Information Display, P16 Instrument Panel Cluster Control Module, or A105 Instrument Panel Multifunction Human-Machine Interface Control Module contains green and amber lane keep assist indicators. These indicate to the driver the current status of the lane keep assist system and are controlled via serial data by the B174W Front View Camera - Windshield. When the vehicle speed is above the minimum required speed (refer to owner manual) and the system has detected the required lane markings and is ready to assist, the green indicator will be illuminated on the driver information display. If the vehicle has unintentionally left the lane, the amber indicator will flash.

**Multi-axis Acceleration Sensor**
The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The multi-axis acceleration sensor measures vehicle dynamics signals such as velocity and yaw rate for the purpose of determining the vehicles path. The multi-axis acceleration sensor is an integrated part of the K36 Restraints Control Module.

**Steering Wheel Angle Sensor**
The steering intervention is based on the forward looking sensor outputs, such as lateral offset of the vehicle, relative yaw angle and time to line crossing. Over that, other vehicle dynamics signals are needed, e.g. velocity, steering angle, yaw rate for the purpose of a driver suppression. The steering wheel angle sensor measures vehicle dynamics signals such as steering angle for the purpose of determining the vehicles path. The steering wheel angle sensor is an integrated part of the steering gear and K43 Power Steering Control Module.

**K43 Power Steering Control Module**
The K43 Power Steering Control Module uses a torque sensor to detect driver inputs and relays that information to the B174W Front View Camera - Windshield. The electric power steering is used to maintain lane centering.

**Lane Keep Assist Switch**
The lane keep assist switch provides an input to the B174W Front View Camera - Windshield via serial data to turn the lane keep assist system on and off. The B174W Front View Camera - Windshield provides a signal voltage to the normally open momentary switch. When the switch is pressed, the signal circuit is pulled to ground, indicating to the B174W Front View Camera - Windshield that the system has been requested to turn ON or OFF. The lane keep assist switch also contains the lane keep assist switch indicator, which is controlled by the B174W Front View Camera - Windshield to indicate the ON and OFF status of the lane keep assist system. When the system has been enabled by the lane keep assist switch, the B174W Front View Camera - Windshield applies ground to the switch indicator via serial data and illuminates the LED. The location of the lane keep assist switch can vary with different vehicles. For the exact location please refer to the vehicle owner's manual.

**Infotainment system**
The radio controls the audible alert for the lane keep assist. If the vehicle has unintentionally left the lane, the radio will command three beeps as an audible alert to the driver.

**Safety Alert Seat (with HS1)**
The K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) controls the haptic alert provided by the seats. If the vehicle has unintentionally left the lane and the K43 Power Steering Control Module determines the corrective action requires an above threshold amount of effort, three pulses to the left or right side of the seat will be commanded, depending on the lane departure direction.

## Lane Keep Assist Operation

Lane keep assist with lane departure warning provides gentle steering wheel input and alerts to help prevent drivers from unintentionally drifting out of their intended lane.

There is two stages of warning/intervention for the driver: The first stage is the steering push back, if the lane keep assist system detects that the vehicle will cross the lane marking despite it is intervening, a second stage warning shall be issued. The second stage warning is a chime or a haptic alert through the safety alert seat (if equipped). If a haptic seat vibration is used as stage 2 warning, the vibration will occur on the side of the seat, where the lane departure occurred.

System operation can be described by the following modes:

- Off State: The system has been turned off by the driver using the lane keep assist switch. The lane keep assist indicator will not be illuminated.
- Not Ready To Assist: The system is enabled and the lane keep assist indicator is illuminated, but not ready to assist when any of the following conditions is true:
  - Vehicle speed is less than required for lane keep assist operation. Refer to Owner's Manual for operational speed.
  - The system cannot detect lane markings. This may be because there are no lane markings, as on a country road or that the lane markings cannot be determined due to snow, rain, or other driving conditions.
  - The windshield area in front of the camera or the camera lens is blocked by fog, dirt, damage to the windshield or other elements that may prevent the camera from detecting lane markings.
- Ready To Assist: The system is enabled and ready to warn of the unintentional lane crossing. The system is ready to assist when the green lane keep assist indicator is illuminated on the driver information display.

### Lane Crossing Alerts

- When one of the following conditions are met, the system will not give alerts:
  - The correct turn signal is activated. An activated turn signal is interpreted as an intentional lane crossing.
  - The operator makes an intentional steering maneuver.
  - The operator makes an intentional accelerating maneuver.
  - The operator makes an intentional braking maneuver.
- Lane crossing alert consists of the following:
  - The amber lane keep assist indicator will flash.
  - "push-back" steering torque input (or nudge) from electric power steering to help prevent a lane departure
  - Three chimes are activated through the radio or three pulses to the left or right side of the active safety seat (if equipped).

## Hands On Lane Centering Assist (if equipped)

Hands on Lane Centering Assist operates similar to Lane Keep Assist but provides continuous lateral assistance to help keep the vehicle in the center of the lane while Adaptive Cruise Control is engaged. Hands on Lane Centering Assist utilized the steering wheel touch sensors and driver monitoring camera to ensure the driver actively has their hands on the steering wheel and has eyes on the road.

Hands on Lane Centering Assist must be enabled in infotainment vehicle settings, Adaptive Cruise Control engaged, and road lanes visible by the Front view Camera-Windshield: in order for the Hands on Lane Centering Assist to operate.

System states:

- Standby: (white Hands-On steering wheel icon with white lane keep assist lines) feature not engaged due to possible environmental or driver reasons.
- Active: (green Hands-On steering wheel icon with green lane keep assist lines) feature is active and controlling
- Lane Departure Warning: (amber Hands-On steering wheel icon with flashing amber lane keep assist lines) activated when the vehicle moves outside of a predefined threshold of the lane. The system detects that the vehicle is drifting toward or beyond the lane markings.
- Environmental degrades : (amber Hands-On steering wheel icon with white lane keep assist lines) operation degrades are currently alerting for environmental reasons such as lane line confidence low, exceeds road curvature limit, etc.
- Driver Override: (white Hands-On steering wheel icon with white lane keep assist lines) driver has taken control from Hands On Lane Centering Assist.

If the system senses the driver is not meeting necessary requirements (hands on wheel, eyes on road) driver warnings will escalate and can deactivate Hands On Lane Centering Assist. If this occurs three times, the Hands On Lane Centering Assist will be unavailable for the remainder of the Ignition/Vehicle On cycle.

## Safety Alert Seat Description and Operation

The safety alert seat uses pulsing driver seat vibrations to intuitively communicate the direction of a possible crash threat. Two P45 Front Seat Lane Departure Warning Actuators are utilized to create the vibration and are located on the left and right sides of the seat cushion. Utilizing two motors allows the vibration to be localized to the left or right side of the seat, depending on the side of the vehicle generating the alert, or to vibrate both simultaneously.

**Note:** The following systems may not be available on all vehicles.

The following systems utilize the safety alert seat:

- Lane Departure Warning and Lane Keep Assist – Utilizes left or right-side pulses to alert drivers if they unintentionally drift out of their lane
- Rear Cross Traffic Alert – Utilizes left or right-side pulses to the direction of an approaching vehicle
- Forward Collision Alert – Simultaneously pulses on both sides to warn drivers of a possible collision with the vehicle that they're following
- Front Pedestrian Braking – Simultaneously pulses on both sides to warn drivers of a possible collision with a pedestrian
- Front Parking Assist, Rear Parking Assist, and Backing Warning (part of the Rear Automatic Braking system) – Simultaneously pulses on both sides to warn drivers of a possible low-speed collision

## Safety Alert Seat Components

The active safety seat utilizes the following components:

- K9 Body Control Module (without A45)
- K40D Driver Seat Adjuster Memory Module (with A45)
- P45L Front Seat Lane Departure Warning Actuator - Left
- P45R Front Seat Lane Departure Warning Actuator - Right

### K9 Body Control Module (without A45)

The K9 Body Control Module receives serial data messages from other modules and provides voltage to control the P45 Front Seat Lane Departure Warning Actuators. The K9 Body Control Module will pulse the left, right, or both P45 Front Seat Lane Departure Warning Actuators with the number of pulses requested over serial data. The K9 Body Control Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

### K40D Driver Seat Adjuster Memory Module (with A45)

The K40D Driver Seat Adjuster Memory Module receives serial data messages from other modules and provides voltage to control the P45 Front Seat Lane Departure Warning Actuators. The K40D Driver Seat Adjuster Memory Module will pulse the left, right, or both P45 Front Seat Lane Departure Warning Actuators with the number of pulses requested over serial data. The K40D Driver Seat Adjuster Memory Module monitors the control circuits for open, short to ground, and short to voltage conditions and will set DTCs if a circuit fault is detected.

### P45 Front Seat Lane Departure Warning Actuator

The P45 Front Seat Lane Departure Warning Actuator is DC motor located in the driver's seat bottom cushion. Two P45 Front Seat Lane Departure Warning Actuators are used in the seat bottom cushion, positioned on the left and right side. An offset weight is attached to the motor. When activated, the spinning offset weight creates a vibration felt by the driver through the seat cushion.

Each P45 Front Seat Lane Departure Warning Actuator receives a constant chassis ground. The motor is controlled by the K9 Body Control Module (without A45) or K40D Driver Seat Adjuster Memory Module (with A45) by providing voltage through a dedicated control circuit. When an alert is required, the control module will apply voltage, activating the P45 Front Seat Lane Departure Warning Actuator

## Side Blind Zone Alert Description and Operation

The side blind zone alert system detects and reports "objects of interest" on either side of the vehicle, within a specified "blind spot" zone. The system is designed to alert the driver, with a visual display placed on the side view mirror, to the presence of objects of interest that may not be visible in the inside rearview mirror and outside rear view mirrors. Although this system is intended to help drivers avoid lane change collisions, it does not replace driver vision and therefore should be considered a lane change aid. Even with the side blind zone alert system, the driver must check carefully for objects outside of the reporting zone (e.g., a fast approaching vehicle) before changing lanes. In the event that the system senses a malfunction through its diagnostic routines, the system will be disabled and the driver will be visually notified.

When the system detects a vehicle in the side blind zone while driving forward, an amber warning symbol will light up in the appropriate outside mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Side blind zone alert is active when the vehicle is out of park, or the parking brake is off on manual transmission vehicles, and at any speed up to approximately 140 km/h (87 MPH). If a vehicle is detected in the blind zone, the warning symbols will illuminate on the appropriate side. When the vehicle is started, both outside mirror indicators will briefly illuminate to indicate that the system is operating. The warning symbols will vary brightness based on the ambient light conditions.

## Side Blind Zone Alert Components

- B218L Side Obstacle Detection Control Module - Left
- B218R Side Obstacle Detection Control Module - Right
- K9 Body Control Module
- S79D Front Side Door Window Control Switch - Driver
- S79P Front Side Door Window Switch - Passenger
- A9A Outside Rearview Mirror – Driver
- A9B Outside Rearview Mirror – Passenger
- Safety Alert Seat (HS1)

### B218 Side Obstacle Detection Control Module

The B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right are located on each side of the vehicle behind the rear fascia and are not directly visible from outside the vehicle. The B218 Side Obstacle Detection Control Modules use radar to determine the presence of objects nearby. Both B218 Side Obstacle Detection Control Modules communicates with the vehicle via serial data. The B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right also communicate with one another on a private CAN serial data bus. When an object is detected in the side blind zone, the B218L Side Obstacle Detection Control Module - Left and B218R Side Obstacle Detection Control Module - Right will send a CAN message to the K9 Body Control Module to illuminate the appropriate side blind zone alert indicator. Vehicles equipped with Super Cruise (UKL) use the short range radar rear for object detection.

### K9 Body Control Module

The B218L Side Obstacle Detection Control Module - Left and the B218R Side Obstacle Detection Control Module - Right will send a CAN message to the K9 Body Control Module when requesting the driver or passenger indicator be illuminated. The K9 Body Control Module then sends a LIN message to the S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger with the indicator request.

### S79 Front Side Door Window Control Switch

The B218L Side Obstacle Detection Control Module – Left and the B218R Side Obstacle Detection Control Module – Right will send a CAN message to the K9 Body Control Module when requesting the driver or passenger indicator be illuminated. The K9 Body Control Module then sends a LIN message to the S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger with the indicator request. The S79D Front Side Door Window Control Switch - Driver or S79P Front Side Door Window Switch - Passenger will apply voltage to the indicator control circuit to illuminate the appropriate indicator.

### A9 Outside Rearview Mirror

The A9A Outside Rearview Mirror – Driver and A9B Outside Rearview Mirror – Passenger each contain an icon that is backlit with high intensity, amber-colored LED’s located on the mirror surface. The display brightness adapts to day/night conditions. The P34D Side Object Detection Indicator – Driver and P34P Side Object Detection Indicator – Passenger in the appropriate A9 Outside Rearview Mirror is illuminated if the specific B218 Side Obstacle Detection Control Module detects a vehicle in the side blind zone to inform the driver that there is a vehicle driving in the blind spot zone.

### Safety Alert Seat (HS1)

The K40 Seat Memory Control Module (with A45) or K9 Body Control Module (without A45) controls the P45 Front Seat Lane Departure Warning Actuators. The P45 Front Seat Lane Departure Warning Actuators provide haptic alert to the driver. If an object is detected, the system will command pulses to the P45LR Seat Haptic Movement Motor – Driver Left Rear or P45RR Seat Haptic Movement Motor – Driver Right Rear, depending on the location of the object, as an alert to the driver.

## Side Blind Zone Alert Operation

When the vehicle is started, both A9 Outside Rearview Mirror indicators will briefly illuminate to indicate that the system is operating. The system is designed to detect objects of interest as small as a 125cc motorcycle with rider. The detection zone starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and 3 m (10 ft) behind the vehicle at a height of 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system may illuminate an indicator due to guardrails, signs, trees, shrubs, and other non-moving objects. This is normal system operation; the vehicle does not need service.

When the system detects a vehicle in the side blind zone or lane change alert area while driving forward, independent if passing a vehicle or being passed, an amber warning symbol will illuminate in the appropriate A9 Outside Rearview Mirror. This indicates that it may be unsafe to change lanes. If the driver then activates the turn signal, the amber warning symbol starts flashing as an extra warning not to change lanes.

Foul weather may affect the operation of the side blind zone and lane change alert systems. Occasional missed alerts can occur under normal circumstances and will increase in wet conditions. The number of missed alerts will increase with increased rainfall or road spray. Heavy rainfall, as well as mud, dirt, snow, ice, or slush build-up on the rear fascia, can completely disable the system.

If the vehicle is towing a trailer or has an object such as a bicycle rack attached to the rear of the vehicle, the side blind zone and lane change alert systems may not function properly and the indicators may illuminate intermittently or remain illuminated all the time.

Side blind zone may not alert the driver to vehicles rapidly overtaking the vehicle from the rear or if the vehicle is overtaking another vehicle, with a speed difference of more than 8 mph.

If the vehicle is traveling in an open area where another vehicle cannot be detected within 2 minutes, the side object detection may become unavailable and it may take 3-4 hours of driving to establish normal system function.

## Lane Change Alert Operation

An integrated function of the side blind zone alert system is lane change alert. Lane change alert supplements the side blind zone alert system by detecting approaching vehicles on either side of the vehicle that may not yet be in the side blind zone alert area. The detection zone for lane change alert starts at the outside rearview mirror and extends out to 3.5 m (11 ft) at the back corner of the vehicle and up to 70 m (230 ft) behind the vehicle at a height between 0.5 m (1.5 ft) and 2.0 m (6 ft) above the ground. The system determines when the indicator will illuminate based on the rate of closure, or approach speed, of an approaching vehicle. As the rate of closure become faster, the indicator will illuminate sooner.

## Rear Cross Traffic Alert Operation

Rear cross traffic alert displays a red warning triangle with a left or right pointing arrow on the infotainment display to warn of traffic coming from the left or right. This system detects objects coming from up to 20 m (65 ft) from the left or right side of the vehicle. When an object is detected, either three beeps sound from the left or right or three safety alert seat pulses occur on the left or right side, depending on the direction of the detected vehicle.

## Driver Information Center Messages

### SIDE BLIND ZONE ALERT OFF or LANE CHANGE ALERT OFF

This message indicates that the system has been disabled through the driver information center. Refer to the vehicle owner’s manual for instructions on how to set personalization options on the driver information center.

### SERVICE SIDE DETECTION SYSTEM

This message indicates that the system requires service. When the message is displayed, the indicators will remain illuminated at all times, notifying the driver that the side blind zone system should not be relied upon when changing lanes. Since the sensors are also used for rear cross traffic alert, this feature will also be inoperative.

### SIDE DETECTION SYSTEM UNAVAILABLE

This message indicates that the system has been temporarily disabled because the sensor is blocked or can otherwise not accurately detect vehicles or objects. Such instances may be mud, dirt, snow, ice, or slush build-up on the rear fascia, heavy rainfall, excessive road spray, fascia damage or stickers. An over or under-voltage condition or over-temperaure will also cause the message to display.

The rear cross traffic alert system will read the GPS latitude and longitude on the serial data bus and calculate if the vehicle is within a Radio Astronomy zone. These zones are located in Europe and Japan and require the sensors to be turned off. The “Side Detection System Unavailable” message will be displayed to the driver when this occurs.

The system is continuously fine tuning the radar alignment. If the B218 Side Obstacle Detection Control Module is removed or significantly disturbed, such as removing the rear fascia or sensor bracket, an initial alignment is automatically performed by the system to enable system operation. However, the SIDE DETECTION SYSTEM UNAVAILABLE may remain for several hours of driving as the system fine tunes the radar alignment to ensure satisfactory alert performance.

## Super Cruise Description and Operation

**Note: ONSTAR SERVICE PLAN REQUIRED**. An active OnStar service plan that includes Emergency Services is **required** for Super Cruise operation. The terms and conditions must also be signed for OnStar, otherwise **Super Cruise will not operate**.Verify the OnStar system is not damaged and is operating properly. An Onstar Blue Button press is recommended. Refer to: [Link target (target-id 149641-) not found] . The message “Unavailable GPS Signal Lost” may display if OnStar is not completely set up. This includes such details as the OnStar account does not have the Terms and Conditions signed off.

Super Cruise is a combination of many systems and modules running simultaneously .It is a comprehensive feature set designed to help a driver avoid collisions or reduce crash damage while driving, backing, and parking. The K124 Image Processing Module is the primary controller for the active safety system. The K124 Image Processing Module communicates on multiple serial data busses to share information with various control modules throughout the vehicle. The K124 Image Processing Module uses various sensors and control modules to monitor the vehicle surroundings and take deliberate action to avoid collisions or reduce crash damage. Super Cruise tightly integrates the forward collision alert, adaptive cruise control, parking assist, and active emergency braking systems into a single cohesive system.

Super Cruise is available only on limited-access freeways that are separated from opposing traffic.

**Super Cruise is designed to be available and engage only under the following conditions:**

- Adaptive Cruise Control (ACC) is ON

  Refer to *Adaptive Cruise Control Description and Operation 11-23*
- Forward Collision System set to alert and brake

  Refer to *Forward Collision Alert Description and Operation (with UGN) 11-30* *Forward Collision Alert Description and Operation (without UGN) 11-28*
- The vehicle is on a limited-access freeway
- Camera or radar sensors are not covered, obstructed, or damaged
- The system detects that the driver appears attentive
- The lane markings are clearly visible – lane markings may be obscured, for example, by glare or poor weather conditions
- Teen Driver is not active
- DTC B1AD2 may set in the supplemental restraint system if the SuperCruise switch is depressed without a driver in the driver’s seat.

## How the System Works

### Driver Attention Camera

To ensure safety, drivers must pay attention to the road at all times. Our proprietary head tracking software helps make sure your eyes are on the road, and alerts you when you need to pay more attention or take back control.

### Steering Wheel Light Bar

If the steering wheel light bar flashes green, the system has detected that the driver may not be paying sufficiently close attention. Refer to *Driver Monitoring Description and Operation 11-41*

The flashing will stop when the system detects that sufficiently close attention to the road has resumed.

If the steering wheel light bar flashes green for too long, Super Cruise will alert the driver to take control of steering immediately by flashing the light bar red. Also, either beeps will sound or the Safety Alert Seat will vibrate. See “Collision/Detection Systems” under Vehicle Personalization in the Owner’s Manual. Take over steering, then Super Cruise will disengage. To re-engage Super Cruise, press the Super Cruise button on the steering wheel.

If the steering wheel light bar flashes red for too long, a voice command will tell you to take control of the vehicle.

Take control of the steering immediately; Adaptive Cruise Control and Super Cruise will disengage.

A Driver Information Center (DIC) message will indicate that Super Cruise is locked out. Super Cruise cannot be re-engaged until the next ignition cycle.

Continued failure to take over steering will cause the vehicle to slow in your lane of travel and eventually brake to a stop and an OnStar® advisor will be called. The brake lights and hazard warning flashers will come on.

### Steering Wheel Touch Sensors

There are three touch zones on the steering wheel to detect where the driver’s hands are during vehicle operation. Touch sensing zone 1 is defined as the rear surface of the steering wheel closest to the windshield. Touch sensing zone 2 is defined as the front left surface of the steering wheel closest to the driver. Touch sensing zone 3 is defined as the front Right surface of the steering wheel closest to the driver. There is no touch sensors on the light bar at the top center of the wheel.

## K124 Image Processing Module

### Automated Driving Mapping Downloads

Map database updates and GPS enhancement data are periodically downloaded to the K124 Image Processing Module, using the vehicle’s OnStar Wi-Fi hotspot. If a mobile device with its own Wi-Fi hotspot uses the same SSID and password as the vehicle, the vehicle may connect to the mobile device to download the data. To prevent downloading using a mobile device data plan, use a different SSID and password for the vehicle’s Wi-Fi hotspot and the mobile device, or disable the Wi-Fi hotspot of the mobile device when inside the vehicle. To change the Wi-Fi hotspot SSID and password, go to Settings > Wi-Fi.

**Automated Driving Mapping Database**
Super Cruise uses a LiDAR-scanned map database, which governs system use and enables it only in areas where appropriate road conditions are detected. The advanced map data restricts Super Cruise use to divided, limited-access freeways with defined entry and exit ramps. MAP UPDATES Super Cruise map updates are automatically downloaded via the vehicle's OnStar Wi-Fi hotspot. The Wi-Fi option should always be turned on. Super Cruise will be disabled if the map reaches 7 months old. To turn on Wi-Fi, go to Settings > Wi-Fi.

For more information on Super Cruise, refer to: *http://www.cadillac.com/world-of-cadillac/innovation/super-cruise.html*

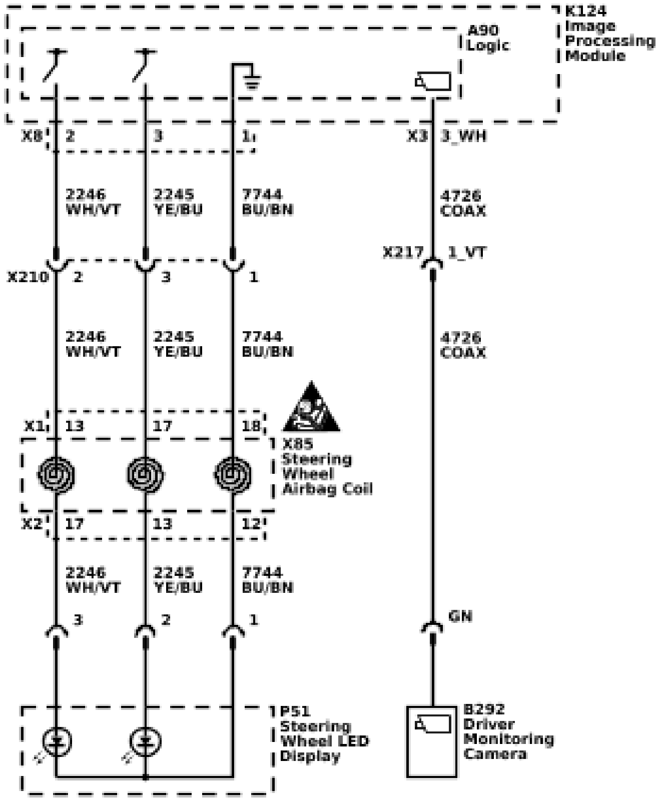
## Super Cruise Messages on the Driver Information Center Summary

| | |
|---|---|
| Unavailable Turn on Adaptive Cruise Control | Adaptive Cruise Control must be on before Super Cruise can be enabled.<br>• Set speed is not required before enabling Super Cruise.<br>• Adaptive Cruise Control is not required to be engaged before enabling Super Cruise. |
| Unavailable Set Forward Collision Setting to Alert and Brake | Super Cruise is disabled unless Alert and Brake is selected.<br>1. Select the Settings menu, then Vehicle, then Collision/Detection Systems, and then Forward Collision System.<br>2. Set Forward Collision to Alert and Brake. |
| Unavailable No Road Information | • There is no map information available for that portion of a controlled access road. Recent road reconstruction may turn off Super Cruise for that section of road until new map information is available.<br>• The vehicle is not on the correct type of road. A controlled access freeway is required for Super Cruise.<br>• There are lanes entering or exiting on both the left and right side of the freeway.<br>• The vehicle is approaching a freeway interchange. The message will appear for 10 seconds or less. |
| Unavailable Sensors Can't Find Lane Lines | • Rain or snow is inhibiting the system's ability to see lane lines.<br>• Direct sunlight is on the front camera at dawn or dusk.<br>• There are missing or poor lane line markings on the road.<br>• There is sun glare on the road surface.<br>• There is heavy rain, puddles, or road spray. |
| Unavailable Sensor Can't See Face Clearly | • Sun is shining into the Driver Attention System (DAS) camera.<br>• Dawn or dusk sun glare is on the driver's face.<br>• Cups, food, hands, or other objects are obscuring the DAS view of the driver's face.<br>• The steering column is pointed too high or low for the DAS to see the driver. Adjust the steering column or the seat if the message occurs frequently. |
| Unavailable Looking Away From Road for Too Long | The driver monitoring system detects that the driver is not looking at the road. |
| Unavailable Center Vehicle In Lane | The Super Cruise system has determined that the vehicle is not centered in the lane lines. Once the vehicle has been centered in the lane lines, the white 🛞 will display in the instrument cluster indicating that Super Cruise is available. |
| Unavailable Driving Too Fast | The vehicle is traveling faster than 137 km/h (85 mph).<br>The maximum Super Cruise speed in curves will vary based on how sharp the curve is. The vehicle will automatically decrease speed if needed. |
| Unavailable Driving in Exit Lane | The Super Cruise system has detected that the vehicle is in an exit lane. |
| Unavailable GPS Signal Lost | • There is poor reception in isolated areas.<br>• Reception is being blocked by buildings or other large structures. |
| Unavailable You Have Taken Vehicle Control | • The brake pedal is being pressed.<br>• The Adaptive Cruise Control has been canceled or turned off. |
| Unavailable Sensor Blocked | Clear snow, ice, dirt, or other contaminants from the front and rear areas of the vehicle. |
| Unavailable Sharp Curve | Some curves are too sharp to be navigated by the Super Cruise system. Super Cruise will be available after the curve is traveled. |
| Super Cruise Unavailable | Super Cruise is unavailable for reasons not described in other messages. |
| Super Cruise Locked Out See Owner's Manual | The driver did not take control of the vehicle when prompted by the Super Cruise system. The Super Cruise system will be disabled until the ignition is turned off and back on. |

# Driver Monitoring and Occupant Detection

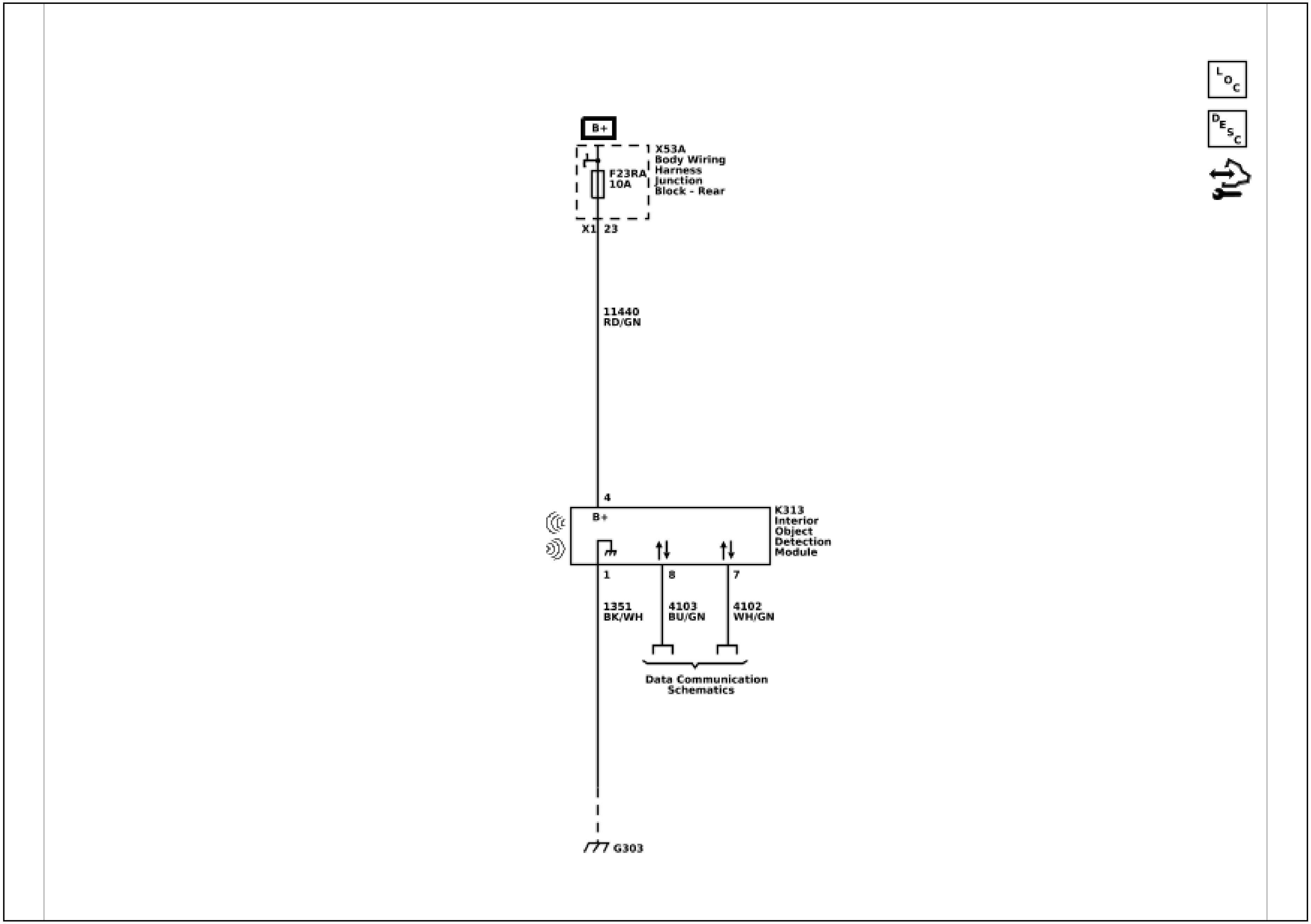
## Schematic and Routing Diagrams

## Driver Monitoring Schematics (Driver Monitoring System (UKL))


K124
Image
Processing
Module
A90
Logic
X8
2
3
1
X3
3_WH
2246
WH/VT
2245
YE/BU
7744
BU/BN
4726
COAX
X210
2
3
1
X217
1_VT
2246
WH/VT
2245
YE/BU
7744
BU/BN
4726
COAX
X1
13
17
18
X85
Steering
Wheel
Airbag Coil
X2
17
13
12
2246
WH/VT
2245
YE/BU
7744
BU/BN
3
2
1
GN
P51
Steering
Wheel LED
Display
B292
Driver
Monitoring
Camera

6885707

## Occupant Detection Schematics (Occupant Detection (RS0 / RSM))


LOC
DESC
B+
X53A Body Wiring Harness Junction Block - Rear
F23RA 10A
X1 23
11440 RD/GN
4
B+
K313 Interior Object Detection Module
1
8
7
1351 BK/WH
4103 BU/GN
4102 WH/GN
Data Communication Schematics
G303
6885708

# Description and Operation

## Driver Monitoring Description and Operation

### System Operation

The driver monitoring system is part of the Adaptive Cruise Control with Lane Following (RPO: UKL) feature.

The driver monitoring system (DMS) utilizes an infrared camera located on the steering column, and infrared illumination provided by IR LEDs embedded in the steering wheel to monitor the driver and provide an estimate of the driver’s attention state to the Image Processing Module. The resultant image of the Driver is not visible to the driver or GM Service. The driver monitoring system is used as an input to enable/disable the SuperCruise system; therefore driver monitoring system should only be active when its function is requested by the Image Processing Module. For many drivers, the driver monitoring system IR LEDs may be visible as a dim red glow when the system is active.

The driver monitoring system requires the IR illumination LEDs to be illuminated for operation. The LEDs turned on by K124 Image Processing Module command and will only be illuminated when the Adaptive Cruise Control (ACC) with Lane Following is engaged by the customer.

Additionally, all the video signal circuits are twisted and shielded to prevent any interference that may lead to a loss of video signal resolution and cause a degraded video image. These circuits must not be spliced/ removed from shielding or will cause image degradation.

### Driver Monitoring Components

The Driver Monitoring system consists of the following components:

- Driver Monitoring Camera
- Driver Monitoring Control Module
- Driver Monitoring Indicators

### Driver Monitoring System Outputs

Driver Monitoring System will monitor driver’s head position and area of interest and notify Image Processing Module of the driver’s attention state. Possible attention states are:

- On Road
- Off Road
- Lap Zone (a special case of Off Road)
- Center Console (a special case of Off Road)
- PVOE (Eyes Closed): eyes closed or eyes not visible
- Unknown: This value indicates that the driver cannot be tracked or driver’s visual attention state cannot be estimated, for whatever reason
- Invalid: This value indicates that the driver monitor system is not presently attempting to determine the driver’s attention state due to, either a fault is present in the system, or the system has not completed a self-diagnostic and therefore cannot provide a trustworthy output

### Driver Monitoring System Operation

In order for the driver monitor system to function correctly, the driver’s face must be oriented such the camera can view that facial features from above the eyes to below the mouth. See the driver interaction section below for helping customers understand conditions that might prevent the system from recognizing a driver. When assessing the driver’s area of attention (where the driver is looking), the driver monitor system primarily uses the orientation of the face, and uses the eyes/eyelids as a secondary input. Therefore, if a driver looks at a location with the eyes only (without turning his/her head) driver monitor system will most likely report where the face is oriented as if the eyes are straight forward. This is critical if the driver is required to look at a small area of interest such as the center console; the face must be distinctly oriented towards the center console region for driver monitor system to acknowledge a glance, such as for a driver alertness check glance.

The driver monitor system Control Module receives constant power from a direct connection to battery; a constant ground signal; and a wake-up signal (COMM_ENABLE) and GM_LAN communication from the Image Processing Module. The Control Module supplies power and command signal to the driver monitor system camera, and the camera provides live images and camera exposure information to the Control Module through a co-axial cable connection. The Control Module also provides power and control signals to the IR LEDs located within the steering wheel.

The Image Processing Module wakes/puts to sleep up the driver monitor system system through a COMM_ENABLE signal; a high signal wakes the driver monitor system, and low signal puts the driver monitor system to sleep.

Once the driver monitor system is awake, the Image Processing Module forces the driver monitor system IR LEDs to an OFF state if the driver monitor system function is not required (SuperCruise is not requested by the driver). In this case, driver monitor system will report over GM-LAN that driver monitor system is unavailable (driver monitor system_Available = FALSE).

Once the driver requests SuperCruise function, the Image Processing Module will allow driver monitor system to control the IR LEDs. Once IR LED control is allowed, the driver monitor system will begin to attempt to track the driver, and report driver attention state as described above.

During normal operation of driver monitor system, because of normal, transient behavior of the driver, it will be normal for the driver monitor system to occasionally report “Unknown” driver attention state, such as if the driver turns their face away from the camera, or moves their head out of camera view.

If the driver monitor system is unable to track the head and/or eyes for an extended period of time, which can be due to driver behavior and/or appearance, the driver monitor system may conclude that it is unable to safely track and report the driver attention. In this case, the driver monitor system will report that it is unavailable for use (driver monitor system_Available = FALSE). This will cause the SuperCruise function to disengage, and the IR LEDs will be forced off by the Image Processing Module again. The driver monitor system will not resume operation again until the Image Processing Module once again returns control of the IR LEDs to the driver monitor system.

The video signal is shielded to prevent any interference that may lead to a loss of video signal resolution which could degrade the system performance and cause the driver monitor system to lose track of the driver’s facial features. The video circuit must not be spliced/removed from shielding or the image could be degraded and driver monitor system performance negatively affected

### Driver Monitoring – Driver Interaction

If a customer complains that Adaptive Cruise Control (ACC) with Lane Following (LF) is not engaging as they would expect or lighting the steering wheel mounted light bar yellow or red too often, and there are no DTC codes set with any of the related components, the system may be turning off because the driver is not recognized. Careful questioning of the driver about their driving habits and when the condition occurs made aid in resolving the issue to their satisfaction.

For best system performance, follow these guidelines:

- Do not block the driver monitor system camera with personal items
- Do not block the indicators on the steering wheel
- When the driver is seated and using the feature, the driver’s head must be above the steering wheel rim. Driver must also be able to reach the steering wheel to control the vehicle while ACC/LF is in use, driver monitor system will not recognize a driver seated in an excessively reclined seat.
- As noted in the Owner’s Manual, if the driver’s head height is similar to the steering wheel rim, lowering the steering wheel tilt may improve the driver monitor system ability to recognize the driver.
- Driver’s face must not be fully or partially obscured, such as by clothing, hair, hand gestures or held items (food, phone, cigarettes, etc.)
- Sunglasses may reduce the systems ability to track the driver, avoid glasses with reflective lenses. Not all sunglasses will work with the system.
- Avoid apparel that covers the face and/or eyes.

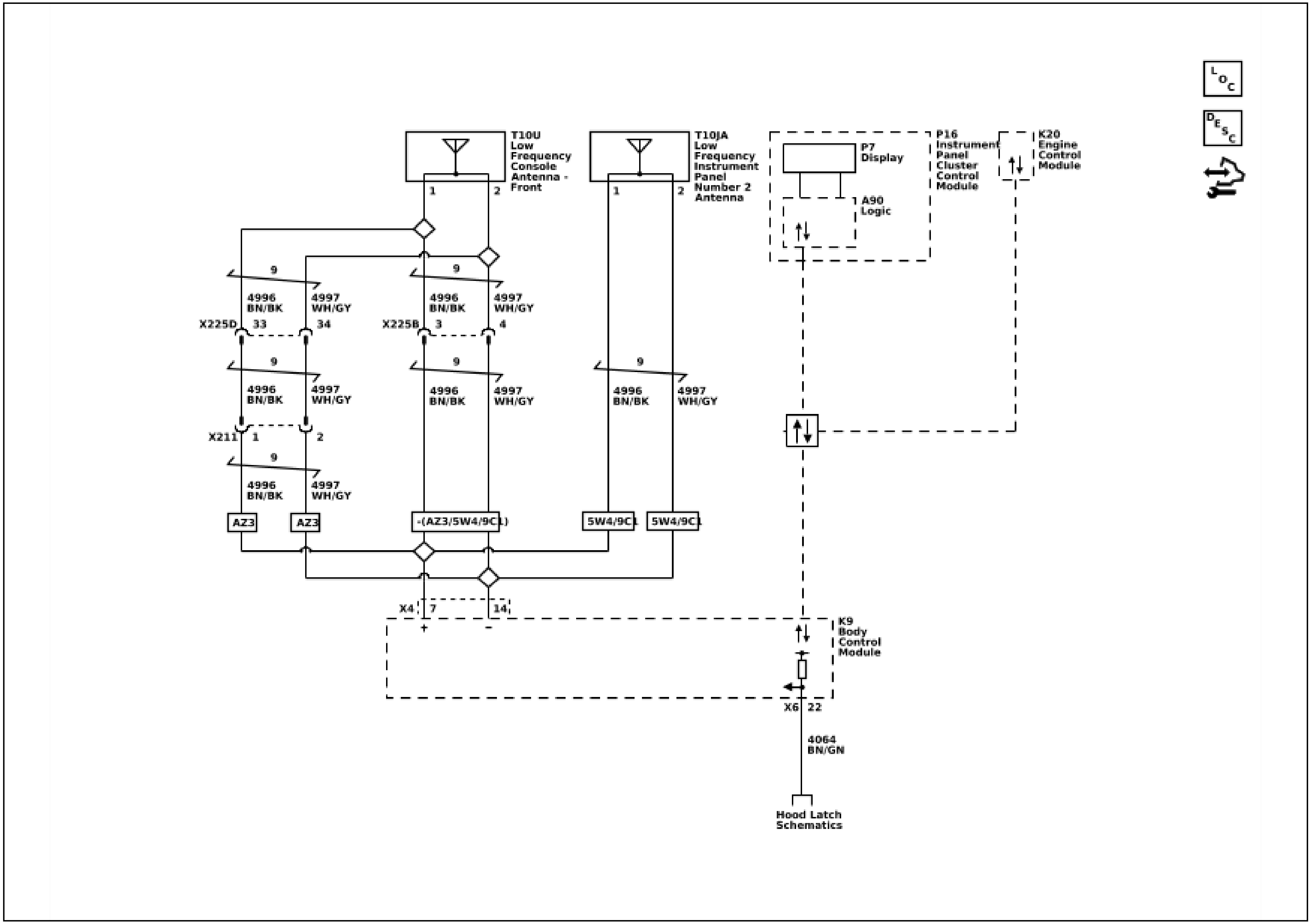
### Driver Monitoring Camera Cleaning

The driver monitor system is designed to function without any periodic maintenance. However, over the course of time and normal vehicle use it is possible that the camera lens cover may become dirty and affect camera performance. If the camera lens cover requires cleaning, it may be cleaned with a soft cloth and normal household non-abrasive cleaners, such as glass cleaner. Never use any abrasive cloths and/or abrasive cleaners to clean the camera lens cover. Never use corrosive chemicals of any kind on the camera lens cover.

# Immobilizer

## Schematic and Routing Diagrams

## Immobilizer Schematics (Immobilizer)


LOC
DESC
T10U Low Frequency Console Antenna - Front
T10JA Low Frequency Instrument Panel Number 2 Antenna
P7 Display
A90 Logic
P16 Instrument Panel Cluster Control Module
K20 Engine Control Module
1
2
9
4996 BN/BK
4997 WH/GY
X225D
33
34
X225B
3
4
X211
AZ3
-(AZ3/5W4/9C1)
5W4/9C1
X4
7
14
+
-
K9 Body Control Module
X6
22
4064 BN/GN
Hood Latch Schematics

6885709

# Description and Operation

## Immobilizer Description and Operation

The immobilizer system functions are provided by the Steering Column Lock Module, the Body Control Module (BCM), and the Engine Control Module (ECM), as well as any control modules which store and report the environment identifier. The Body Control Module uses low frequency antennas in different locations on the vehicle to determine the location of the transmitter. Multiple transmitting antennas are used to ensure complete coverage of the vehicle interior and rear compartment. These antennas transmit to the keyless entry transmitter.

When the vehicle Stop/Start switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message. The BCM then compares this value to a value stored in memory. The BCM also monitors various control modules to determine if the stored environment identifiers match.

If the correct transponder is detected, the electric steering column is unlocked, and there is no start disable from OnStar the BCM will send the prerelease allowed message via serial data to the ECM. The vehicle will be allowed up to 3 seconds run time. If the theft check is incorrect, the environment identifier check fails, the incorrect transponder is detected, the electric steering column is locked, or there is a start disable from OnStar, the BCM will send a negative response and the ECM will not start the vehicle or will immediately shut off the vehicle if prerelease allowed the vehicle to start.

If RF communication is interrupted, a "No Remote Detected" message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket. The immobilizer coil antenna is located in the immediate vicinity of the transmitter pocket. Placing the transmitter in the pocket/slot will create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

The components of the immobilizer system are as follows:

- BCM
- ECM
- Steering column lock control module
- Immobilizer coil antenna
- Low frequency antenna
- Ignition key/Keyless entry transmitter
- Security indicator
- Various control modules which store and report the environment identifier

### Body Control Module (BCM)

The immobilizer system is an integral part of the BCM and is controlled internally within the BCM. The BCM can learn up to 8 keys (transponder values). The BCM uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antennas are used to ensure complete coverage of the vehicle interior and rear compartment. The BCM monitors the ignition mode switch. When the ignition mode is changed, the BCM will command, or “ping”, the low frequency antenna.

The BCM uses the following inputs:

- Environment identifier exchange with various modules
- Encrypted code from the vehicle key, received by the immobilizer coil antenna if the keyless entry transmitter signal isn’t detected as indicated by the “No Remote Detected” message
- Encrypted code from the vehicle key

The BCM uses the following outputs:

- Prerelease Allowed signal communication with ECM
- Challenge/Response with ECM

When a transponder value is received by the BCM, the BCM will compare this value to the learned key code stored in memory. The BCM then performs one of the following functions:

- If the encrypted code value matches the values stored in the BCM memory, the BCM will send the Prerelease Allowed signal to the ECM via serial data.
- If the encrypted code unique value does not match the value stored in the BCM, the BCM will send the start disable message to the ECM via serial data.
- If the BCM is unable to receive the vehicle key encrypted code value, the BCM will not send any messages to the ECM.

### Engine Control Module (ECM)

The ECM receives the BCM Prerelease Allowed signal and simultaneously the ECM sends a challenge to the BCM via the serial data circuit upon seeing the vehicle transition from OFF to any other power mode. Both the ECM and BCM perform a calculation on this challenge. If the calculated response from the BCM equals the calculation performed by the ECM, the ECM will allow vehicle starting.

### Low Frequency Antenna

When commanded, or “pinged”, the low frequency antenna broadcast a challenge to the keyless entry transmitter. Because of the low power of the antenna, this challenge is only broadcast in an approximate three meter range of the antenna. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment.

### Steering Column Lock Control Module

On vehicles with electronic steering column lock that use a steering column lock control module the immobilizer system will prevent vehicle starting if there is a fault or no communication with the steering column lock control module.

### Keyless Entry Transmitter

Each keyless entry transmitter contains a transponder with a unique encrypted value. The transponder's encrypted value is fixed and unable to be changed. The immobilizer system uses the keyless entry transmitter transponder value to determine if a valid keyless entry transmitter is being used to start the vehicle.

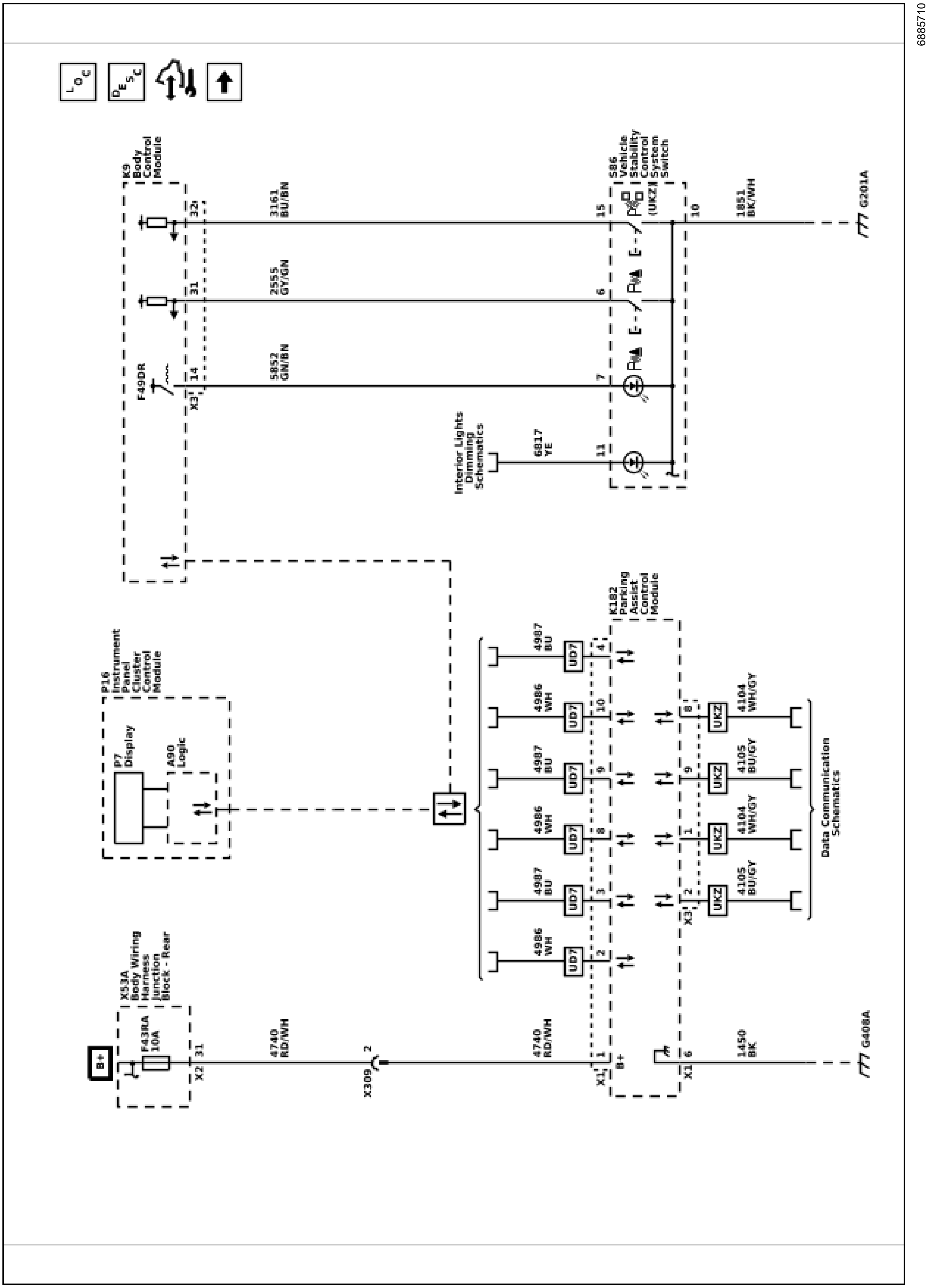
### Security Indicator

The BCM will command the Instrument Cluster to illuminate the security indicator when the vehicle is ON to indicate a fault has occurred within the immobilizer system.

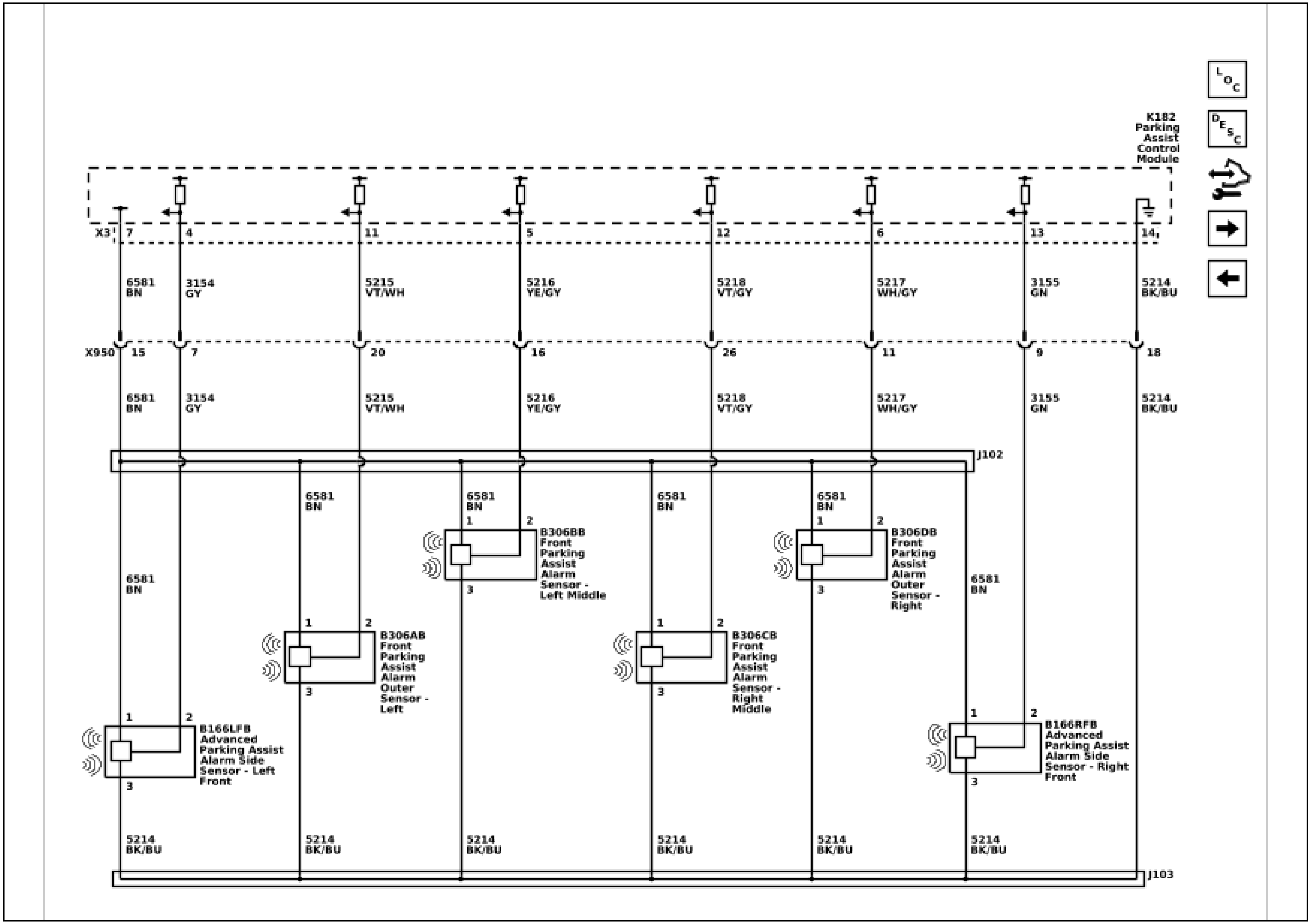
# Parking Assistance Systems

## Schematic and Routing Diagrams

## Parking Assistance Systems Schematics (Park Assist - Controls, Power, Ground, and Serial Data)

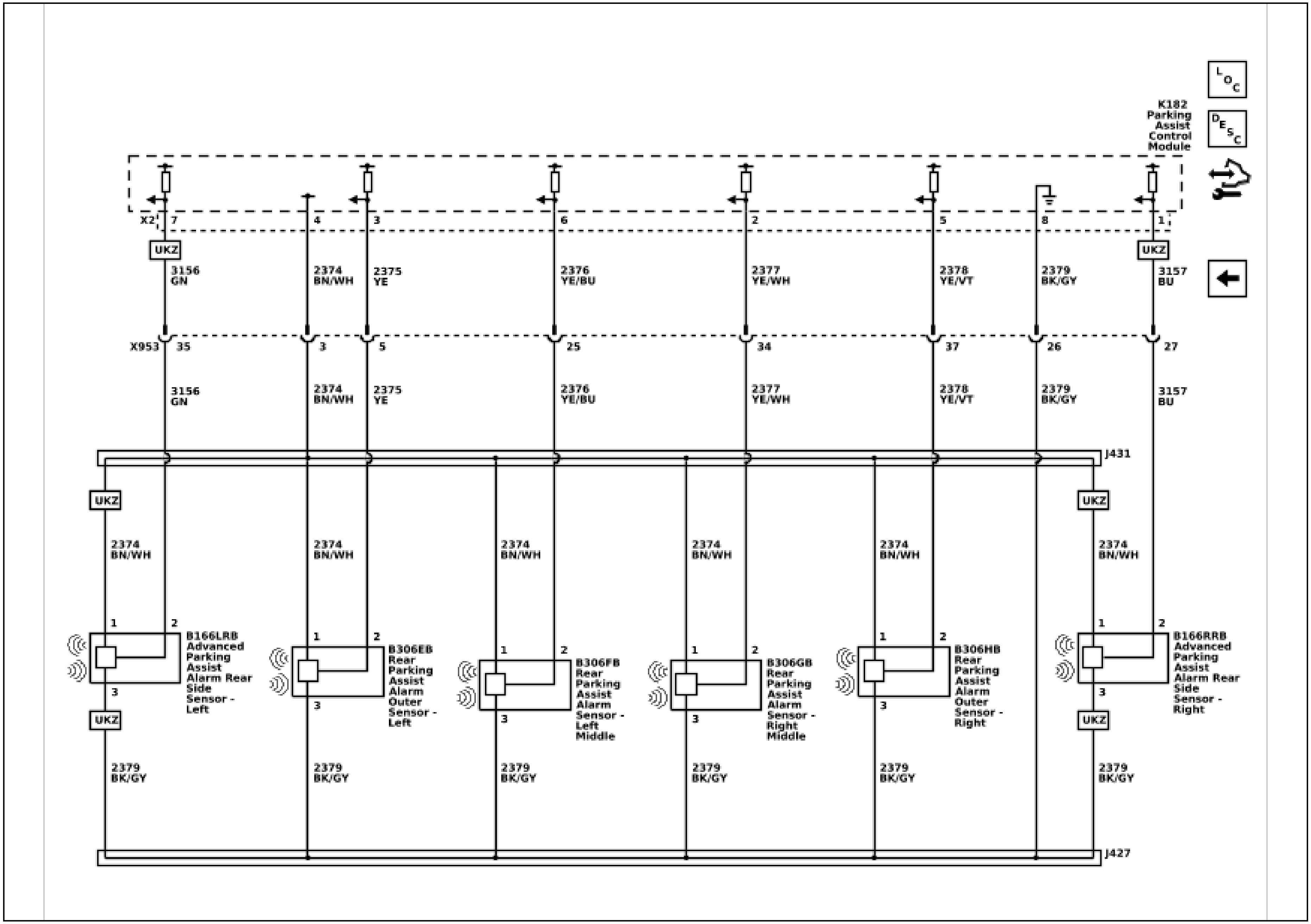

6885710
LOC
DESC
K9 Body Control Module
F49DR
X3
14
31
32
3161 BU/BN
2555 GY/GN
5852 GN/BN
S86 Vehicle Stability Control System Switch
(UKZ)
15
6
7
11
10
1851 BK/WH
G201A
Interior Lights Dimming Schematics
6817 YE
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
X53A Body Wiring Harness Junction Block - Rear
B+
F43RA 10A
X2
31
4740 RD/WH
X309
2
4740 RD/WH
X1
1
B+
K182 Parking Assist Control Module
4987 BU
4986 WH
UD7
4
10
9
8
3
2
8
9
1
2
X3
UKZ
4104 WH/GY
4105 BU/GY
Data Communication Schematics
X1
6
1450 BK
G408A

## Parking Assistance Systems Schematics (Park Assist - Front Sensors (UKZ))


K182 Parking Assist Control Module
X3
7
4
11
5
12
6
13
14
6581 BN
3154 GY
5215 VT/WH
5216 YE/GY
5218 VT/GY
5217 WH/GY
3155 GN
5214 BK/BU
X950
15
7
20
16
26
11
9
18
J102
J103
B306BB Front Parking Assist Alarm Sensor - Left Middle
B306DB Front Parking Assist Alarm Outer Sensor - Right
B306AB Front Parking Assist Alarm Outer Sensor - Left
B306CB Front Parking Assist Alarm Sensor - Right Middle
B166LFB Advanced Parking Assist Alarm Side Sensor - Left Front
B166RFB Advanced Parking Assist Alarm Side Sensor - Right Front
1
2
3

6885711

## Parking Assistance Systems Schematics (Park Assist - Rear Sensors)


K182 Parking Assist Control Module
X2
7
4
3
6
2
5
8
1
UKZ
3156 GN
2374 BN/WH
2375 YE
2376 YE/BU
2377 YE/WH
2378 YE/VT
2379 BK/GY
3157 BU
X953
35
3
5
25
34
37
26
27
J431
J427
B166LRB Advanced Parking Assist Alarm Rear Side Sensor - Left
B306EB Rear Parking Assist Alarm Outer Sensor - Left
B306FB Rear Parking Assist Alarm Sensor - Left Middle
B306GB Rear Parking Assist Alarm Sensor - Right Middle
B306HB Rear Parking Assist Alarm Outer Sensor - Right
B166RRB Advanced Parking Assist Alarm Rear Side Sensor - Right
6885712

# Description and Operation

## Parking Assist Description and Operation (UD5)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle's throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- Infotainment system

### K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

### B166/B306 Parking Assist Alarm Sensors

The B166/B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

### Infotainment System

The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

## Rear Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

## Parking Assist System Messages

### SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

### PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

### Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

### Parking Assist Description and Operation (UKZ)

**Note:** The automatic parking assist system can steer the vehicle automatically. Be aware that, in some unlikely situations, the vehicle steering wheel and wheels/tires may move without warning. Please be especially aware of situations when vehicle front tires are lifted above the ground on a vehicle hoist as the wheels could move without warning. Please exercise special care if any work is performed with the vehicle running and in gear while elevated on a hoist.

In addition to the eight B166/B306 Parking Assist Alarm Sensors used for front and rear park assist, the automatic parking assist system uses two additional B166/B306 Parking Assist Alarm Sensors located on the front fascia and two additional B166/B306 Parking Assist Alarm Sensors located on the rear fascia. These sensors face toward the side of the vehicle and are used to aid the driver in positioning the vehicle in a parallel parking maneuver.

**Note:** Any malfunction in the parking assist system may disable automatic parking assist. Automatic parking assist will not operate if the parking assist system is disabled.

## Automatic Parking Assist Components

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- K124 Image Processing Module
- B166/B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Automatic Parking Assist Switch
- Safety Alert Seat (with HS1)
- Infotainment System

### K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B166/B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B166/B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

### B166/B306 Parking Assist Alarm Sensors

The B166/B306 Parking Assist Alarm Sensors are located in the front and rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

### K9 Body Control Module

The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

The K9 Body Control Module also monitors the automatic parking assist switch. When the automatic parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the advance parking assist function. The K182 Parking Assist Control Module responds by beginning to search for a suitable parking space if conditions are correct.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

### Parking Assist Switch

The parking assist system can be activated and deactivated by pressing the parking assist switch. The K9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

### Parking Assist Switch Indicator

When the parking assist system is enabled, the K124 Image Processing Module will illuminate the indicator on the switch. The indicator is controlled through a low control circuit by the K124 Image Processing Module.

### Automatic Parking Assist Switch

The automatic parking assist system can be activated and deactivated by pressing the automatic parking assist switch. The K9 Body Control Module applies voltage and monitors the automatic parking assist switch signal circuit. The automatic parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the automatic parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

### Safety Alert Seat (with HS1, without A45)

The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

### Safety Alert Seat (with HS1 and A45)

The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

**Infotainment System**
The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

## Parking Assist Operation

The rear parking assist system uses four B166/B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

The front parking assist system uses four B306 Parking Assist Alarm Sensors located on the front fascia and functions when the vehicle is moving forward at low speeds. When a driver is driving forward at a low speed, up to about 11 km/h (7 mph), the B166/B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) in front of the vehicle. When an object is within the measuring range of the B166/B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.3 m (1 ft) of the front bumper, 5 repeating low-pitched beeps are played from the front speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides. The tone for front parking assist is higher pitched than the tone for rear parking assist.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

## Automatic Parking Assist Operation

The automatic parking assist system aids the driver when attempting a parking maneuver. The K182 Parking Assist Control Module uses the four additional side-facing B306 Parking Assist Alarm Sensors located in the front and rear fascia, along with the eight typical forward and rearward-facing B306 Parking Assist Alarm Sensors, to guide the driver into a parking space.

**Note:** The driver seat belt must be buckled for the Automatic Parking Assist to operate. Unbuckling the seat belt during Automatic Parking Assist operation can cause the system to stop and not complete the parking maneuver.

The automatic parking assist switch is used to initiate the parking assist system when traveling at speeds below approximately 30 km/h (18 mph) (refer to owners manual for exact speed). While driving along a row of vehicles in which the driver wishes to park, the parking assist is activated by a switch or the infotainment screen. This will enable the automatic parking assist system and the K182 Parking Assist Control Module will begin seeking potential parking spots using the B306 Parking Assist Alarm Sensors.

When a parking spot of suitable size is found, the K182 Parking Assist Control Module will display a stop message on the driver information center. The driver accepts the decision by stopping the vehicle. The system calculates the optimal path into the parking spot and will then guide the vehicle into the chosen spot by taking over the shifting, steering, and braking control from the driver. Once in the parking spot, the K182 Parking Assist Control Module will center the vehicle in the spot.

If the automatic parking assist system is unable to complete a parking maneuver, a message indicating that the maneuver has been aborted will be displayed on the driver information center. Vehicle control will be given back to the driver once the brake or parking brake is applied.

## Parking Assist System Messages

### SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

### PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

## Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as a brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

## Automatic Parking Assist System Operational Checks

The scan tool Automatic Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

- Automatic Parking Assist Switch Pressed – The automatic parking assist switch has been pressed a second time, aborting the function.
- Automatic Parking Assist Switch Malfunction – The automatic parking assist is stuck closed or has been held down.
- Interrupted by Driver – The Automatic parking assist operation has been aborted by the driver by interfacing with the steering, brake, or accelerator.
- Info Display Control Malfunction – The Automatic parking assist system is not able to provide instructions on the driver information center
- Door Open – A door has been opened.
- Parking Brake Malfunction – A malfunction has been detected in the electric parking brake system.
- Vehicle Dynamics System Status Not Plausible – An implausible scenario between the steering angle sensor, yaw sensor, and lateral/longitudinal accelerometer has been determined.
- Steering Response Malfunction – The steering system has not responded as expected to a steering command.
- Automatic Brake Response Malfunction
- Transmission Response Malfunction – The transmission has not responded as expected to a shift command.
- Automatic Braking Apply Response Not Plausible – An implausible scenario between a brake apply command and vehicle deceleration has been determined.
- Vehicle Movement Detected During Brake Applied Request – Vehicle movement has occurred while the brakes are commanded to apply.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Wheel Speed Direction Signal Invalid – Identified wheel directional travel does not match intended travel direction.
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Maneuver Vehicle Speed Exceeded – The vehicle has exceeded the maximum allowable speed for the parking maneuver.
- Vehicle Speed Too High to Search for a Parking Space – The vehicle has exceeded the maximum allowable speed to search for a suitable parking spot.
- Number of Parking Maneuvers Exceeded – The maximum number of parking attempts for a single maneuver has been exceeded.
- Parking Space Too Small – The vehicle has determined the space for the attempted parking maneuver is too small.
- Vehicle Not Following Parking Space Path – The vehicle is unable to follow the intended path of the parking maneuver.
- Yaw Angle Above Threshold – The expected yaw angle for the parking maneuver has been exceeded.
- Steering Angle Deviation Above Threshold – The expected steering angle for the parking maneuver has been exceeded.
- Object Detected on Both Sides of Vehicle – An object has been detected on both the left and right side of the vehicle.
- Object Detected in Alert Zone – An object has been detected in the vehicle’s path.
- Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

## Parking Assist Description and Operation (UD7)

The parking assist system can help drivers avoid certain objects in their path during low-speed parking. The distance and location of the object is determined by four object sensors located in the rear fascia. The parking assist system may not detect all children, pedestrians, bicyclists, animals or objects below the bumper. Drivers should remember to always check the area around the vehicle before shifting into REVERSE. The parking assist system will not stop or slow down a vehicle. It does not engage a vehicle’s throttle or braking. No safety system can take the place of an alert and engaged driver.

The parking assist system is made up of the following components:

- K182 Parking Assist Control Module
- B306 Parking Assist Alarm Sensors
- K9 Body Control Module
- Parking Assist Switch
- Parking Assist Switch Indicator
- Safety Alert Seat (with HS1)
- Infotainment system

### K182 Parking Assist Control Module

The K182 Parking Assist Control Module provides a reference voltage and a low reference to the B306 Parking Assist Alarm Sensors. The K182 Parking Assist Control Module receives individual signals from each of the four B306 Parking Assist Alarm Sensors and determines the location and distance of an object based on these inputs. When an object is detected, the K182 Parking Assist Control Module will send a serial data message to the infotainment system requesting an audible alert.

### B306 Parking Assist Alarm Sensors

The B306 Parking Assist Alarm Sensors are located in the rear fascia of the vehicle. The sensors are used to determine the distance between an object and the bumper. Each sensor emits an ultrasonic frequency which is reflected off any object located behind the vehicle. These reflections are received by the sensors. The time difference between the emission of the frequency and when the reflection is received is known as sensor echo time; it is used to determine the distance to the object. The sensors report this information to the K182 Parking Assist Control Module.

### K9 Body Control Module

The K9 Body Control Module monitors the parking assist switch and control the parking assist switch indicator. When the parking assist switch is pressed, a serial data message is sent to the K182 Parking Assist Control Module indicating the driver is requesting the system be enabled or disabled. The K182 Parking Assist Control Module responds with a message that the system has been enabled or disabled. The K9 Body Control Module will respond by turning the parking assist switch indicator on or off.

On vehicles with HS1, without A45, the K9 Body Control Module also controls the P45 Seat Haptic Movement Motors for Safety Alert Seat operation.

### Parking Assist Switch

The parking assist system can be activated and deactivated by pressing the parking assist switch. TheK9 Body Control Module applies voltage and monitors the parking assist switch signal circuit. The parking assist switch is a normally open switch. With the switch open, voltage seen at the K9 Body Control Module is high. When the parking assist switch is pressed, the switch is closed and the signal circuit is pulled to ground. With the switch closed, voltage seen at the K9 Body Control Module is low. The K9 Body Control Module will respond to this by sending a serial data message to the K182 Parking Assist Control Module to enable or disable the system.

### Parking Assist Switch Indicator

When the parking assist system is enabled, the K9 Body Control Module will illuminate the indicator on the switch. The indicator receives a constant ground and is controlled through a PWM voltage control circuit by the K9 Body Control Module.

### Safety Alert Seat (with HS1, without A45)

The K9 Body Control Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K9 Body Control Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

### Safety Alert Seat (with HS1 and A45)

The K40D Driver Seat Adjuster Memory Module controls the P45 Seat Haptic Movement Motors. The P45 Seat Haptic Movement Motors provide haptic alert to the driver. If an object is detected, the K40D Driver Seat Adjuster Memory Module will command pulses to the P45 Seat Haptic Movement Motors as an alert to the driver.

### Infotainment System

The infotainment system controls the audible alert for the parking assist system. If the an object is detected the infotainment system will command beeps as an audible alert to the driver.

## Rear Parking Assist Operation

The rear parking assist system uses four B306 Parking Assist Alarm Sensors located on the rear fascia and functions when the transmission is in REVERSE. When a driver is backing up at a low speed, up to about 11 km/h (7 mph), the B306 Parking Assist Alarm Sensors may detect objects up to 1.8 m (6 ft) behind the vehicle. When an object is within the measuring range of the B306 Parking Assist Alarm Sensors, the ultrasonic pulse is reflected and is received by the sending or a neighboring sensor. The sensor converts this signal into a voltage signal and sends this signal to the K182 Parking Assist Control Module. The K182 Parking Assist Control Module evaluates the received sensor signals.

When an object is within 0.6 m (2 ft) of the rear bumper, 5 repeating low-pitched beeps are played from the rear speakers, followed by a continuous tone. If the vehicle is equipped with the Safety Alert Seat (HS1), it will pulse 5 times on both sides.

Some vehicles may have a park assist display on the P16 Instrument Panel Cluster Module with bars that show "distance to object," driving direction, and object location information for the parking assist system. As the vehicle gets closer to the detected object, distance-to-object information and caution triangles may be displayed that changes from yellow to amber to red.

The parking assist system can be turned on and off using the parking assist switch.

The K182 Parking Assist Control Module carries out a self test and monitors the sensors for electrical and mechanical faults. Monitored is the power supply of each sensor and the sensor signals. Mud, ice and snow may cause obstruction of the function of the sensors. The K182 Parking Assist Control Module also determines if the correct type of sensor is installed. If any of these tests fails, a DTC with corresponding symptom is set and the parking assist system is deactivated.

## Parking Assist System Messages

### SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST

The driver information center displays SERVICE PARKING ASSIST or SERVICE DRIVER ASSIST when the K182 Parking Assist Control Module detects a malfunction in the parking assist system and the system is disabled.

### PARK ASSIST OFF

The PARK ASSIST OFF message is displayed in the driver information center when the parking assist system is disabled due to conditions that disable or inhibit the system. The K182 Parking Assist Control Module requests the driver information center display PARK ASSIST OFF when it detects such a condition.

## Parking Assist System Operational Checks

The scan tool Parking Assist Disable History 1–8 data can be used to diagnose a malfunction within the parking assist system or an intermittent concern. The following is a brief description of potential causes which may aid in diagnosis. For each potential issue, perform an appropriate inspect of the component or system and refer to the specific service information subsection related to that system for further diagnosis:

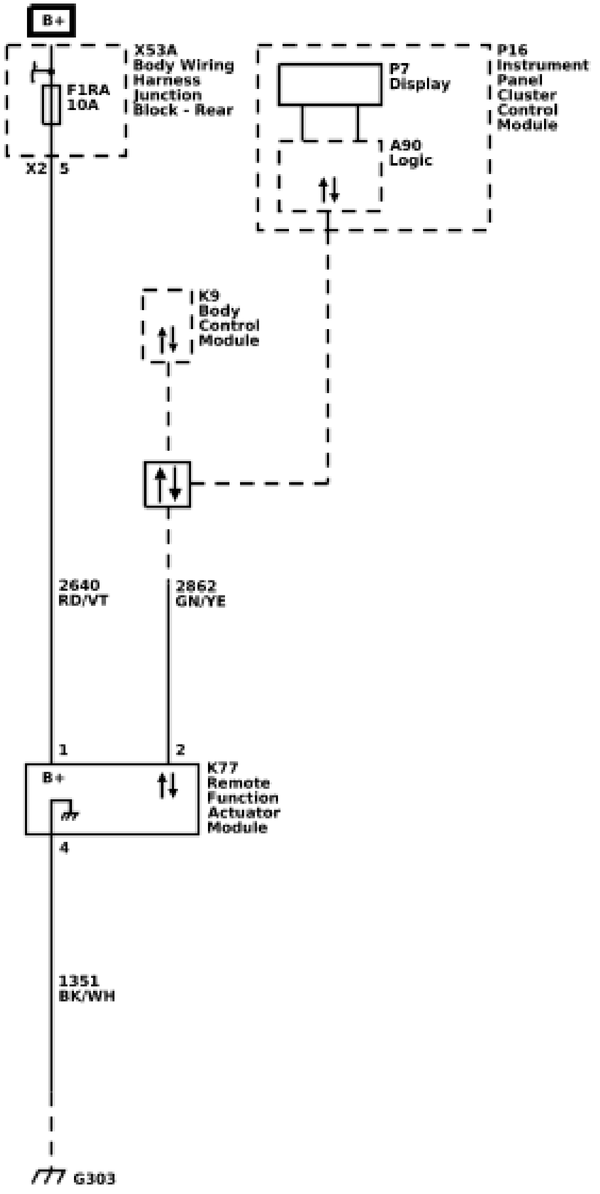
- Disable by Switch – The parking assist system has been disabled through the parking assist switch.
- Disabled by Customization Menu – The parking assist system has been disabled through the vehicle personalization menu. Note: the Parking Assist system customization menu may not be available on all vehicles based on vehicle option content.
- Vehicle Speed Too High – The vehicle is travelling too fast in reverse at speeds of greater than 8 km/h (5 mph).
- Vehicle Speed Invalid – The vehicle is unable to determine the vehicle speed.
- Steering Angle Signal Invalid – The vehicle is unable to determine the steering angle.
- Front Attached Object Detected – An object has been determined to be attached to the front of the vehicle. Common items such as brush guards, light bars, and license plates may cause this concern. Additionally, damage to the front of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).
- Rear Attached Object Detected – An object has been determined to be attached to the rear of the vehicle. Common items such as a hitch receiver, trailer, or a bicycle rack may cause this concern. Additionally, damage to the rear of the vehicle or a misaligned sensor may cause this concern. If the vehicle is damaged in a manner that causes the sensor to detect the bumper itself, the parking assist control module will interpret this as an attached object and disable the system. Carefully inspect the bumper, bumper mounting surface, and sensor retainers before continuing with normal diagnosis. After the detected cause has been addressed the vehicle must be driven at speed greater than 40 km/h (25 MPH).

- Front And Rear Attached Object Detected – An object has been determined to be attached to the front and rear of vehicle.
- Parking Assist Alarm Sensor Blocked – One of the following conditions may be present:
  - One or more of the sensors may be blocked by snow, mud, ice, or other debris. This might happen after going through a car wash in cold weather.
  - Silicone insulator surrounding sensor maybe missing, cut, or twisted.
  - Improperly installed sensor, sensor maybe be crooked due to a tight wire harness.
  - One or more of the sensors may be scratched or the paint maybe chipped.
  - Excessive paint thickness on a sensor may cause an excessive sensor ring time. When replacing or refinishing a sensor, do not apply an excessive amount of paint or clear coat.
- Haptic Seat Malfunction – A fault exists with the safety alert seat. Check for DTCs.
- Chime Malfunction – A fault exists with the vehicle chime. Check for DTCs.
- Parking Assist Switch Malfunction – A fault exists with the parking assist switch. Check for DTCs.
- Invalid Gear – The vehicle has determine a plausibility fault exists with the transmission range.
- Incorrect Power Mode – The vehicle is in an incorrect power mode for parking assist operation.

# Remote Functions

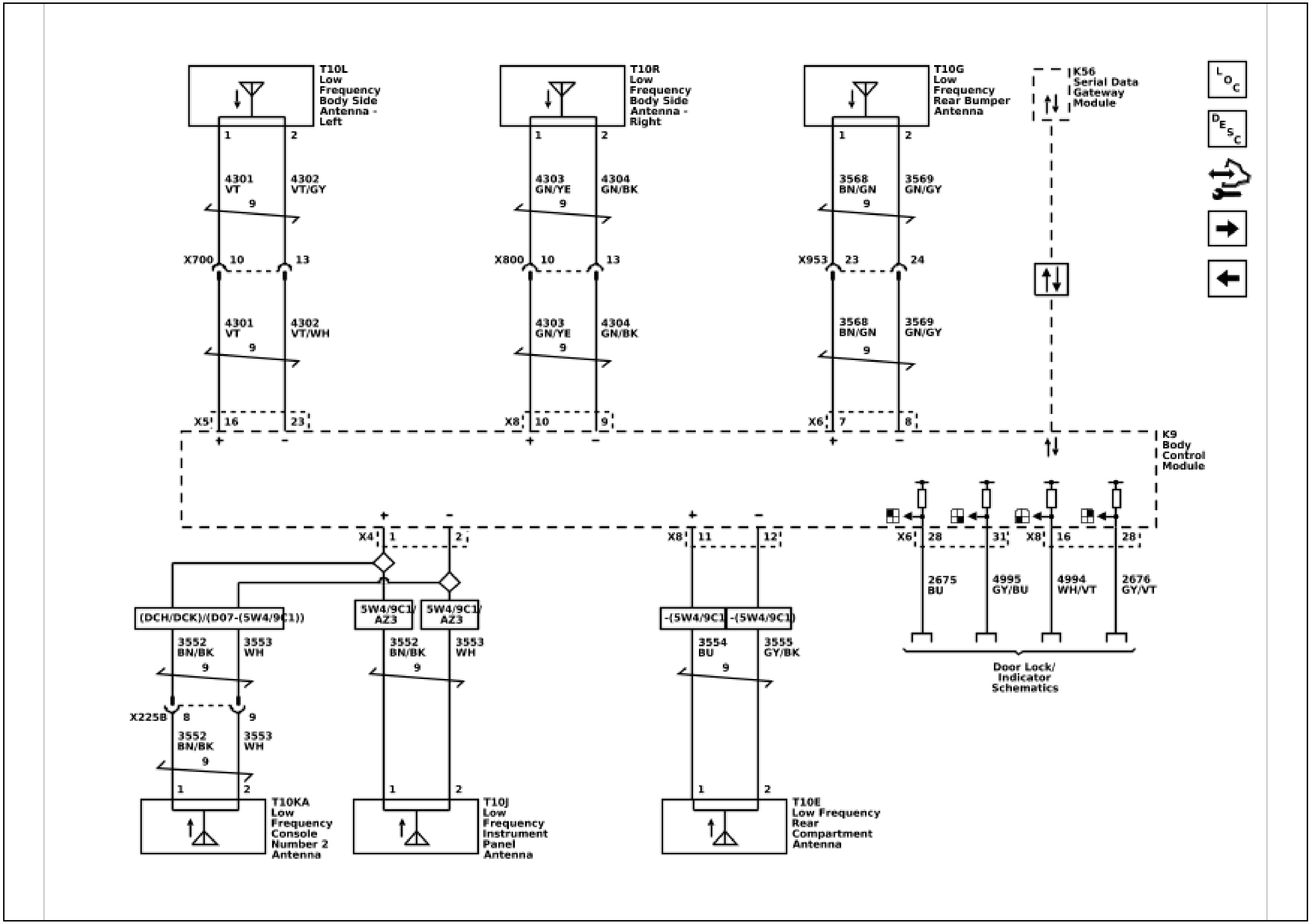
## Schematic and Routing Diagrams

## Remote Function Schematics (Keyless Entry - Active)

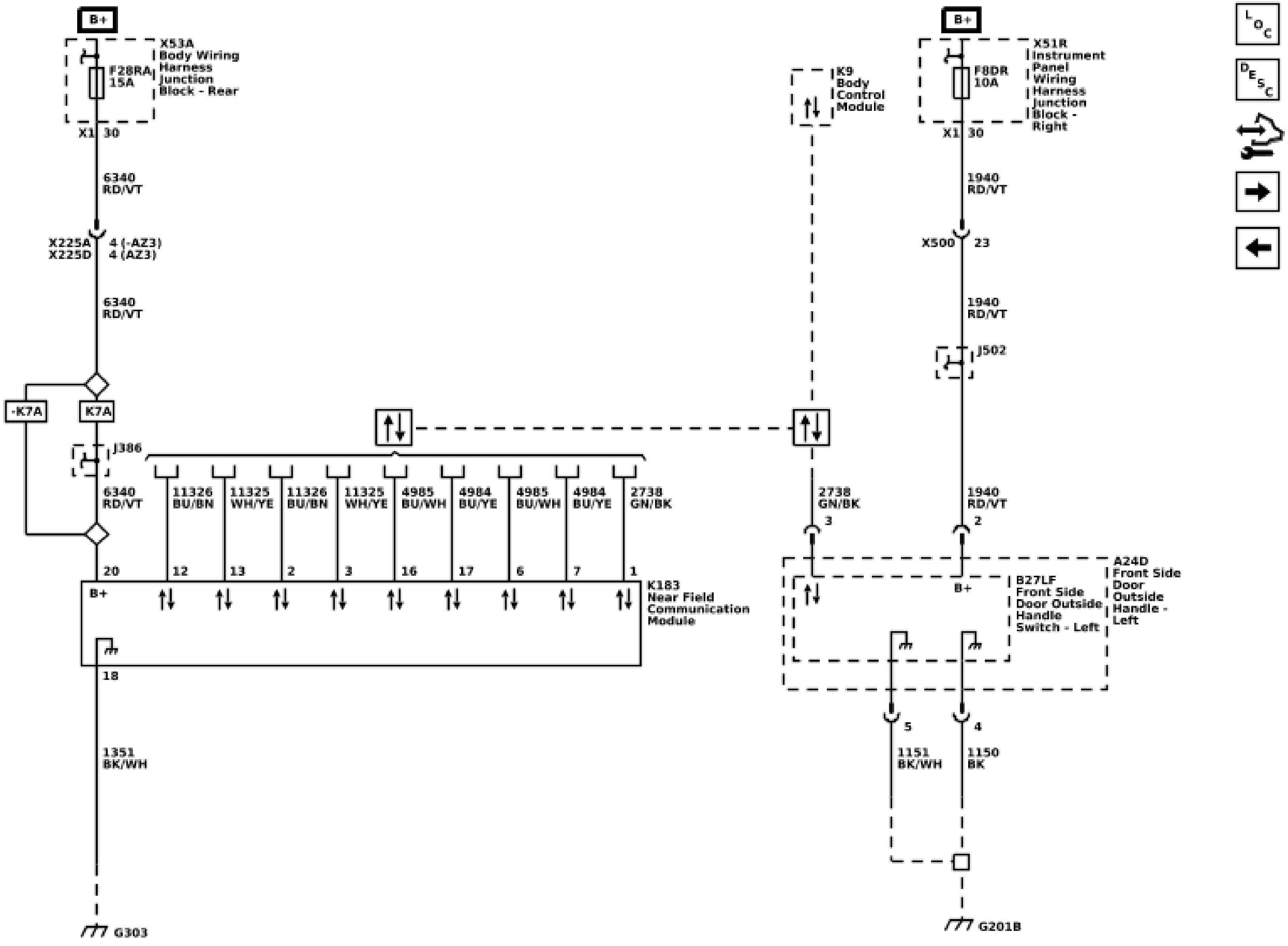

B+
X53A Body Wiring Harness Junction Block - Rear
F1RA 10A
X2 5
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
K9 Body Control Module
2640 RD/VT
2862 GN/YE
1
2
B+
K77 Remote Function Actuator Module
4
1351 BK/WH
G303

6885713

## Remote Function Schematics (Keyless Entry - Passive and Keyless Start)

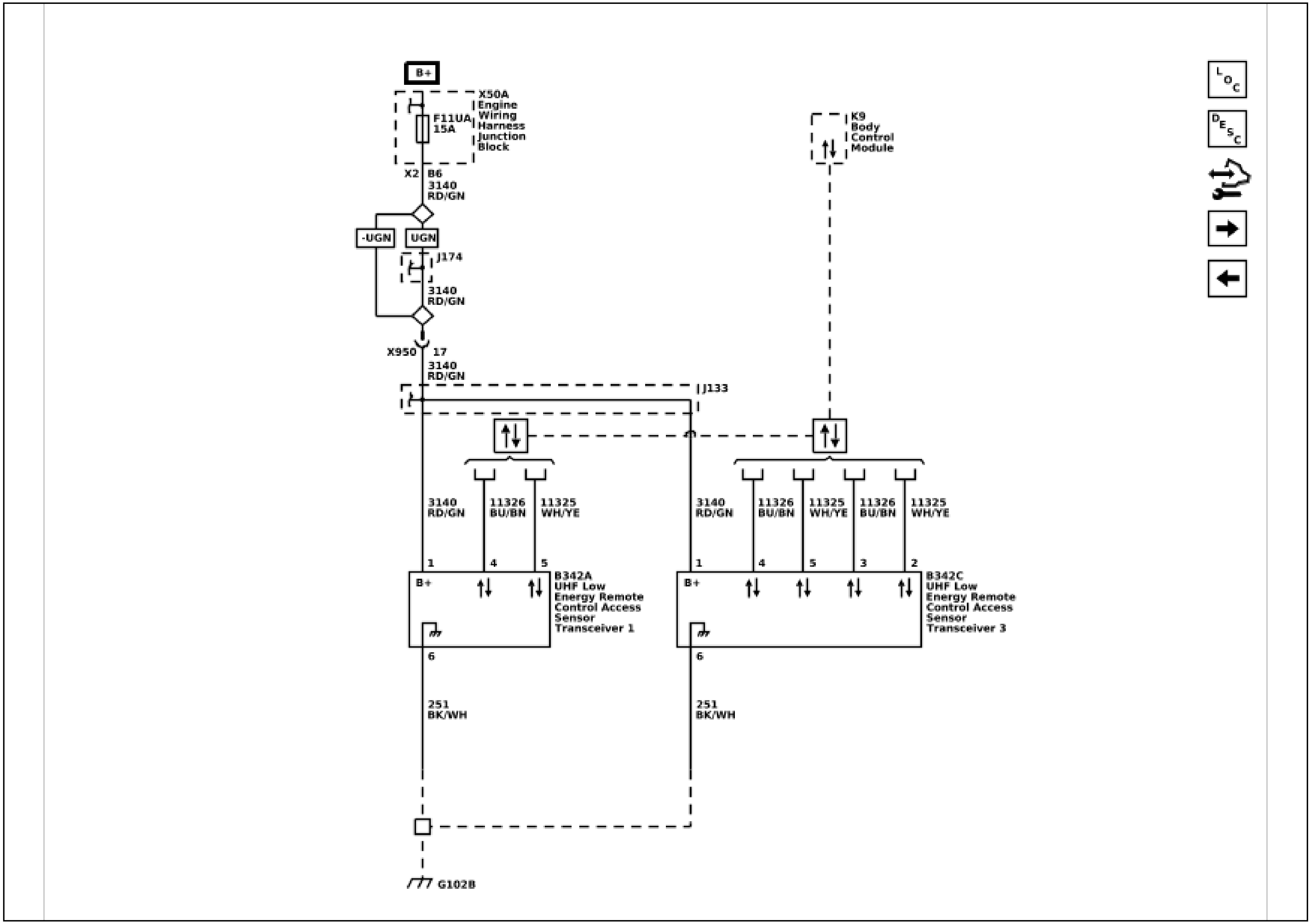

T10L
Low
Frequency
Body Side
Antenna -
Left
1
2
4301
VT
4302
VT/GY
9
X700
10
13
4301
VT
4302
VT/WH
9
X5
16
23
+
-
T10R
Low
Frequency
Body Side
Antenna -
Right
1
2
4303
GN/YE
4304
GN/BK
9
X800
10
13
4303
GN/YE
4304
GN/BK
9
X8
10
9
+
-
T10G
Low
Frequency
Rear Bumper
Antenna
1
2
3568
BN/GN
3569
GN/GY
9
X953
23
24
3568
BN/GN
3569
GN/GY
9
X6
7
8
+
-
K56
Serial Data
Gateway
Module
K9
Body
Control
Module
+
-
X4
1
2
(DCH/DCK)/(D07-(5W4/9C1))
5W4/9C1/
AZ3
5W4/9C1/
AZ3
3552
BN/BK
3553
WH
9
X225B
8
9
3552
BN/BK
3553
WH
9
1
2
T10KA
Low
Frequency
Console
Number 2
Antenna
3552
BN/BK
3553
WH
9
1
2
T10J
Low
Frequency
Instrument
Panel
Antenna
+
-
X8
11
12
-(5W4/9C1)
-(5W4/9C1)
3554
BU
3555
GY/BK
9
1
2
T10E
Low Frequency
Rear
Compartment
Antenna
X6
28
31
X8
16
28
2675
BU
4995
GY/BU
4994
WH/VT
2676
GY/VT
Door Lock/
Indicator
Schematics
L O C
D E S C
6885714

## Remote Function Schematics (Keyless Entry - Virtual Key 1 of 3 (BOR / BOY))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F28RA
15A
X1 30
6340
RD/VT
X225A 4 (-AZ3)
X225D 4 (AZ3)
6340
RD/VT
-K7A
K7A
J386
6340
RD/VT
11326 BU/BN
11325 WH/YE
11326 BU/BN
11325 WH/YE
4985 BU/WH
4984 BU/YE
4985 BU/WH
4984 BU/YE
2738 GN/BK
20
12
13
2
3
16
17
6
7
1
B+
K183
Near Field
Communication
Module
18
1351
BK/WH
G303
K9
Body
Control
Module
2738
GN/BK
3
B+
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F8DR
10A
X1 30
1940
RD/VT
X500 23
1940
RD/VT
J502
1940
RD/VT
2
A24D
Front Side
Door
Outside
Handle -
Left
B27LF
Front Side
Door Outside
Handle
Switch - Left
B+
5
4
1151
BK/WH
1150
BK
G201B
LOC
DESC

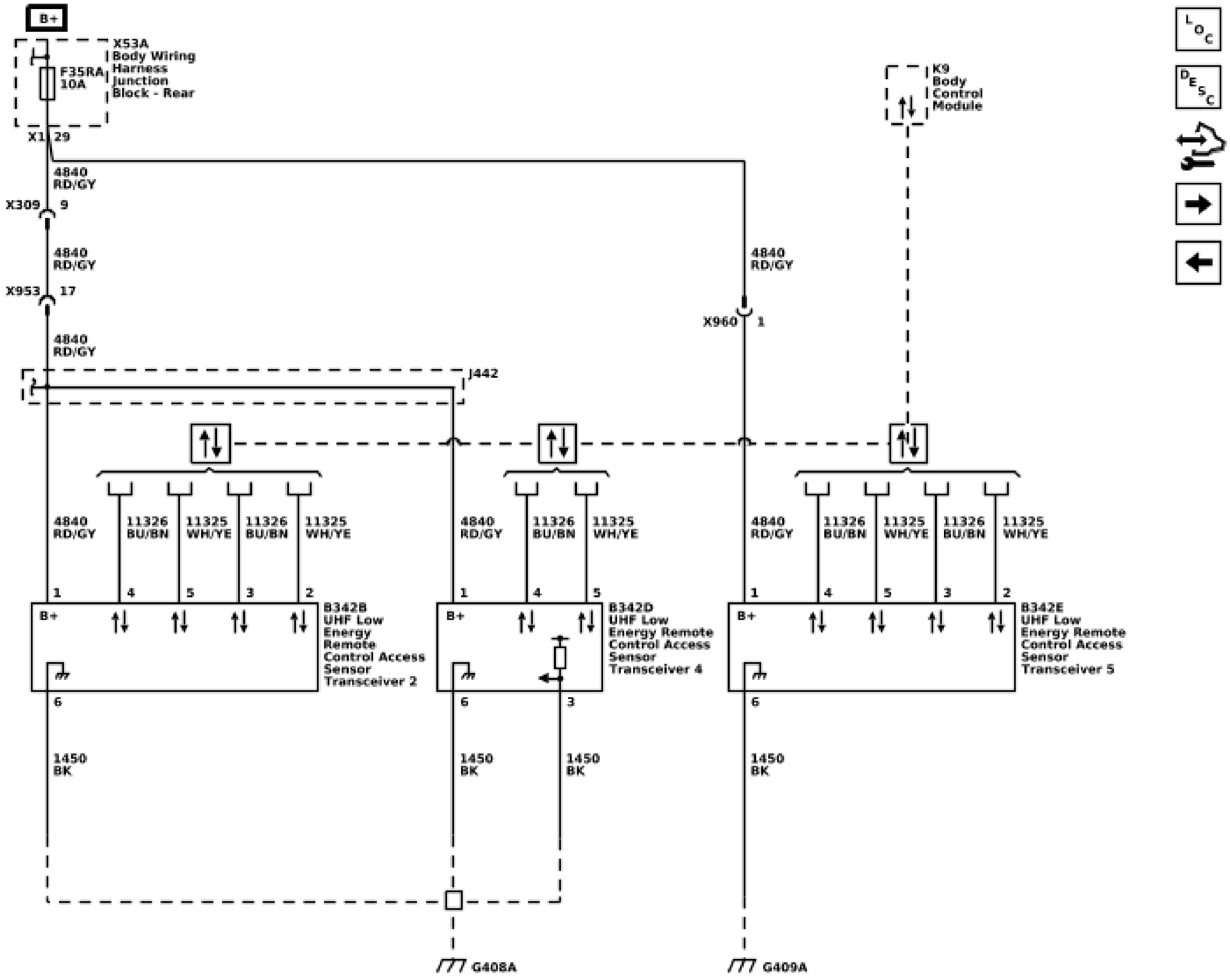
6885715

## Remote Function Schematics (Keyless Entry - Virtual Key 2 of 3 (BOR / BOY))


B+
X50A Engine Wiring Harness Junction Block
F11UA 15A
X2 B6
3140 RD/GN
-UGN
UGN
J174
3140 RD/GN
X950 17
3140 RD/GN
J133
K9 Body Control Module
3140 RD/GN
11326 BU/BN
11325 WH/YE
1
4
5
B+
B342A UHF Low Energy Remote Control Access Sensor Transceiver 1
6
251 BK/WH
3140 RD/GN
11326 BU/BN
11325 WH/YE
11326 BU/BN
11325 WH/YE
1
4
5
3
2
B+
B342C UHF Low Energy Remote Control Access Sensor Transceiver 3
6
251 BK/WH
G102B
L O C
D E S C

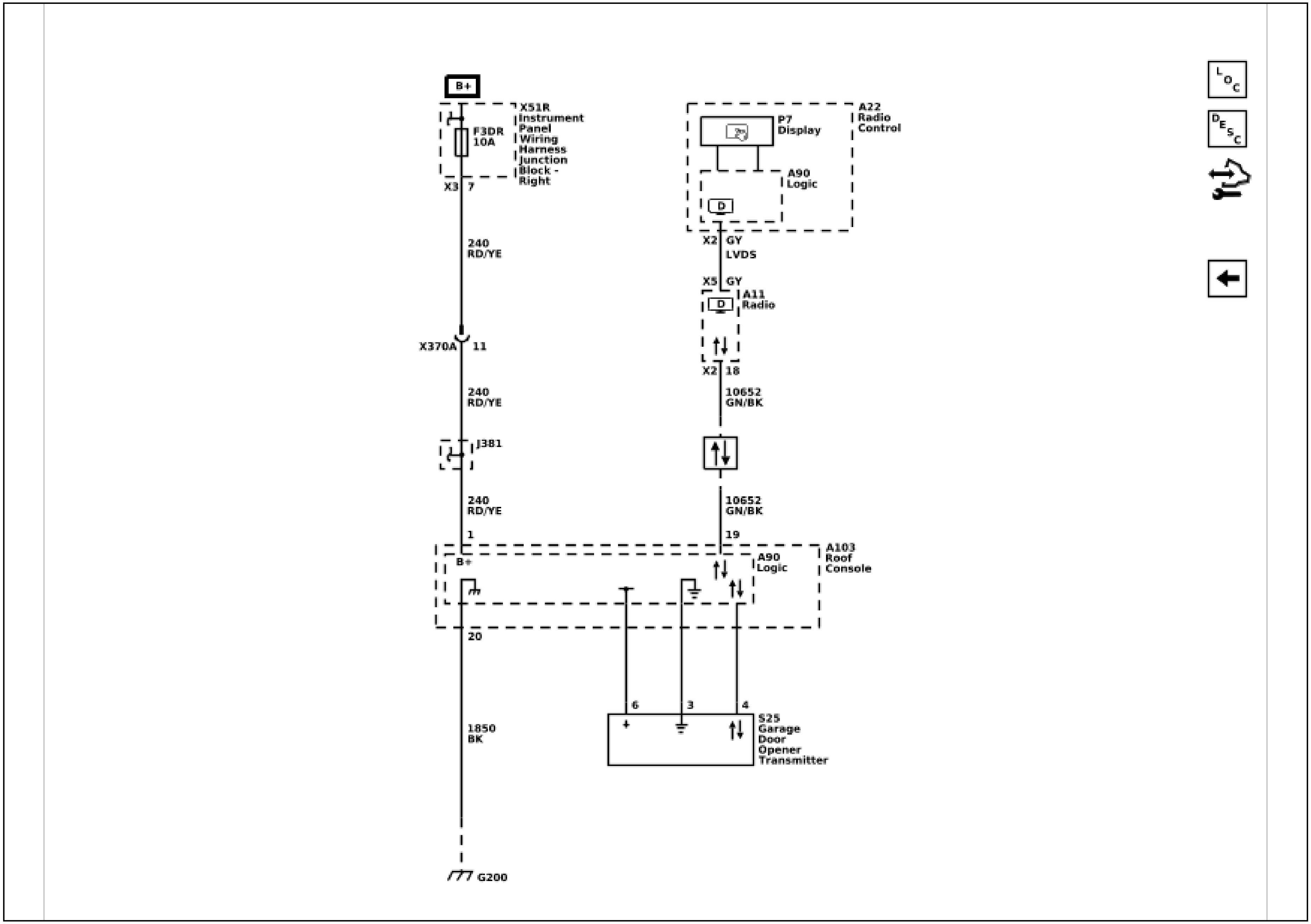
6885716

## Remote Function Schematics (Keyless Entry - Virtual Key 3 of 3 (BOR / BOY))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F35RA
10A
X1 29
4840
RD/GY
X309 9
4840
RD/GY
X953 17
4840
RD/GY
J442
K9
Body
Control
Module
4840
RD/GY
X960 1
4840
RD/GY
11326
BU/BN
11325
WH/YE
11326
BU/BN
11325
WH/YE
1 4 5 3 2
B+
B342B
UHF Low
Energy
Remote
Control Access
Sensor
Transceiver 2
6
1450
BK
4840
RD/GY
11326
BU/BN
11325
WH/YE
1 4 5
B+
B342D
UHF Low
Energy Remote
Control Access
Sensor
Transceiver 4
6 3
1450
BK
1450
BK
G408A
4840
RD/GY
11326
BU/BN
11325
WH/YE
11326
BU/BN
11325
WH/YE
1 4 5 3 2
B+
B342E
UHF Low
Energy Remote
Control Access
Sensor
Transceiver 5
6
1450
BK
G409A
LOC
DESC

6885717

## Remote Function Schematics (Garage Door Opener (UG1))


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
240 RD/YE
1
B+
20
1850 BK
G200
A22 Radio Control
P7 Display
A90 Logic
D
X2 GY
LVDS
X5 GY
A11 Radio
D
X2 18
10652 GN/BK
10652 GN/BK
19
A90 Logic
A103 Roof Console
6
3
4
S25 Garage Door Opener Transmitter
LOC
DESC

6885718

# Description and Operation

## Garage Door Opener Description and Operation

The garage door opener is fixed and rolling code capable. Rolling code is a system that allows the code that the customers receiver receives from the garage door opener to change every time the garage door opener is used within operating range of the receiver. Rolling code programming requires the customer to push a learn/program button on the garage door opener receiver at their home. This button is usually located on the receiver unit under a cover (light cover) on one end of the unit. The customer must follow the garage door opener manufacturers instructions to program/learn the receiver to accept the Universal Home Remote System as an authorized opener for their unit . When the receiver and the garage door opener are initially programmed together, a code is established and a new code is created for every new transmission. The software in the receiver recognizes the garage door opener and accepts the new code.

The garage door opener is compatible with most, but not all types and brands of transmitters.

The garage door opener is a transmitter operating between 288–434 MHz. The power and range of the transmitter is limited to comply with laws governing the generation of radio frequency interference. The transmitter is programmed by the user to accept the signal generated by the user's transmitters.

The garage door opener has a soft touch button within the radio display that may be programmed for individual transmitter/receiver combinations to control up to 8 garage door openers, security gates, lighting systems, etc. Each button represents a transmitter code section of the transmitter, which operates separately from any other button, and may be considered a separate transmitter. Operation consists of simply pressing a button to activate the corresponding transmitter.

The garage door opener does not need any programming after it is replaced, as all programming is stored within the radio. However, for the opener to function it must be programmed to the customer’s garage door or other devices such as a gate. The programming can only be performed at the device being programmed, it cannot be programmed at a service facility. Instructions for programming are listed in the Garage Door Opener Malfunction document in a Diagnostic Aid.

**Note:** Do not use the universal garage door opener (UGDO) with any garage door opener that does not have the stop and reverse safety feature. This includes any garage door opener model manufactured before April 1, 1982.

## Key Card System Description and Operation

### Description and Operation

The Key Card system is a method of vehicle access that utilizes Near Field Communication (NFC) technology to verify the correct key is presented to the vehicle. Upon presentation, the vehicle will either lock or unlock as well as allow vehicle starting within a 2 minute time limit from when the card was first presented. A user would present their Key Card to the K300 Near Field Communication Backup Module, which is typically located behind an applique. For specific K300 location, a user may refer to the Owner’s Manual, or the location is depicted on the Key Card itself. When a user presents a Key Card to the specified applique, the K183 UHF Short Range Low Energy Remote Control Access Transceiver will begin authenticating the Key Card via K300 as a pass-through component. If the information sent to the K183 UHF Short Range Low Energy Remote Control Access Transceiver matches the information stored in the K9 Body Control Module, vehicle access and power moding will be allowed. To power mode the vehicle while using Key Card, a user must do so within 2 minutes of tapping the Key Card to the specified applique.

Unlike the Digital Key system that utilizes the user’s mobile device, Key Card is a standalone system that only shares the K183 UHF Short Range Low Energy Remote Control Access Transceiver as a control module. A Key Card must be learned to the vehicle prior to being used. This procedure can be accessed through Techline Connect. A vehicle has the capability of learning up to 8 Key Cards.

The Key Card system uses the following components:

- Key Card
- K183 UHF Short Range Low Energy Remote Control Access Transceiver
- K300 Near Field Communication Backup Module

### Key Card

The Key Card is a card that utilizes Near Field Communication (NFC) technology to create a secure method of vehicle entry and power moding.

### K183 UHF Short Range Low Energy Remote Control Access Transceiver

The K183 UHF Short Range Low Energy Remote Control Access Transceiver, also referred to as Virtual Key Module (VKM) is the primary control module for the Digital key system. It receives a constant B+ voltage and ground. The UHF Short Range Low Energy Remote Control Access Transceiver communicates with the vehicle via AUTOSAR CAN Bus 5 and with each UHF Low Energy Remote Control Access Sensor Transceiver via Virtual Key Private CAN. The UHF Short Range Low Energy Remote Control Access Transceiver acts as the serial data master to the UHF Low Energy Remote Control Access Sensor Transceiver. The UHF Short Range Low Energy Remote Control Access Transceiver is typically located in a central location of the vehicle interior, often in the center console area. This is to ensure consistent wireless communication coverage in the interior of the vehicle. The UHF Short Range Low Energy Remote Control Access Transceiver takes information gathered from the UHF Low Energy Remote Control Access Sensor Transceiver, as well as information from its own BLE RSSI chip and calculates the position of the mobile devices with respect to the vehicle. Mobile devices position is communicated to BCM in order to allow lock/unlock/starting in the designated zones.

### K300 Near Field Communication Backup Module

The K300 Near Field Communication Backup Module is a LIN module that serves the purpose of pulling data from the Key Card. This data is then sent via LIN to the Near Field Communication module where the data is either verified or rejected. If the data from the Key Card is verified to be correct, vehicle entry will be permitted.

### Keyless Entry System Description and Operation

#### Keyless Entry System Description and Operation – Active

The keyless entry system is a vehicle entry device. The keyless entry system is used in conjunction with the door locks to unlock the vehicle. Keyless entry will lock/unlock a door or open the rear compartment lid when a corresponding button on the keyless entry transmitter is pressed. This is accomplished by the transmitter sending a radio frequency to the remote control door lock receiver that has a direct link to the body control module (BCM). The BCM interprets the signal and activates the requested function or requests the appropriate ECU to activate the function via a serial data message. A low transmitter battery or radio frequency interference from aftermarket devices, such as 2-way radios, power inverters, computers, etc., may cause a system malfunction. High radio frequency traffic areas, such as gas stations that use pay-at-the-pump radio frequency transponders, may also cause interference that could lead to a malfunction. Keyless entry allows you to operate the following features:

- Door lock/unlock
- Rear compartment lid release
- Illuminated entry lamps
- Panic alarm/vehicle locator
- Remote vehicle start
- Passive keyless entry able/disable
- Automatic window express down, if equipped
- Automatic window express up, if equipped
- Automatic power mirror folding/unfolding, if equipped

#### Keyless Entry System Description and Operation – Passive

Passive keyless entry allows entry to a locked vehicle without pressing any buttons on the keyless entry transmitter. The passive entry system uses low frequency antennas in several different areas on the vehicle to determine the location of the transmitter. When passively opening a locked door or the rear compartment, you must have a programmed transmitter with you in your pocket, purse, or briefcase within a one meter range.

When an exterior door handle button is pressed or the rear compartment touch pad is pressed, the body control module activates the low frequency antenna which sends out a challenge to the keyless entry transmitter. Because of the low frequency, communication range is limited. The antenna will emit the challenge in a one meter range. The transmitter must be within this range to receive the challenge. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, entry into the vehicle will be allowed.

As a customer convenience feature, the keyless entry system will notify the driver if the transmitter has been left in the vehicle after exiting by chirping the vehicle horn three times and displaying a message on the DIC. This may be turned off using vehicle personalization. Also, if the transmitter is left in the vehicle after the central door lock switch has been used to lock the vehicle, the driver door will remain unlocked after exiting the vehicle. This is intended to prevent locking the transmitter in the vehicle and being unable to access it.

#### Keyless Entry System Description and Operation – Keyless Start

The keyless start portion of the keyless entry system allows vehicle starting, having only the transmitter as your key. The keyless start system uses low frequency antennas in three different locations on the vehicle to determine the location of the transmitter. Multiple antenna are used to ensure complete coverage of the vehicle interior and rear compartment. When using the keyless start system, a programmed transmitter must be in the vehicle's interior, in the driver's pocket, purse, or briefcase.

When the ignition mode switch is pressed, the low frequency antennas emit a challenge to the keyless entry transmitter. The transmitter receives this challenge and emits it's response as an RF message, which is received by the remote control door lock receiver. If the response is correct, vehicle starting will be allowed. If RF communication is interrupted, a “No Remote Detected” message will be displayed on the DIC. In these cases, the transmitter can be placed in the transmitter pocket located in the center console. The immobilizer antenna coil is located directly beneath the transmitter pocket. Placing the transmitter in the pocket will create a low powered coupling between the transmitter and immobilizer antenna, allowing communications to occur and enabling vehicle starting. If the key has been idle the DIC may display “Key In Sleep Mode, Move Key, Then Start”. In this case move the vehicle key to start the vehicle.

The keyless entry system has the following components:

- Keyless entry integrated key/transmitter
- Driver and passenger side antennas
- Driver and passenger door handle switches (part of the door handle assembly)
- Rear fascia antenna
- Immobilizer antenna coil (front console antenna function)
- Rear console antenna
- Rear Compartment Antenna (If Equipped)
- Body control module (BCM)
- Remote control door lock receiver

### Keyless Entry Transmitters

By operating any of the exterior door handle buttons or the start/stop switch, a nearby transmitter is challenged by a keyless entry antenna. The transmitter will send an RF response to the remote control door lock receiver, which communicates with the BCM. The BCM will interpret this communication and either allow or deny vehicle entry or starting.

### Side Antennas

The keyless entry side antennas are used to transmit low frequency communications to the keyless entry transmitters.

The keyless entry side antennas are located in the driver and passenger body sides. The antennas are controlled by the body control module. When the exterior door handle button is pressed, the respective antenna will send out a challenge to the keyless entry transmitter, which begins the passive entry communications.

### Rear Fascia Antenna

The rear fascia antenna is used to transmit low frequency communication to the keyless entry transmitters for entry to rear compartment.

The rear fascia antenna is located behind the rear fascia. The antenna is controlled by the body control module. When the rear compartment touch pad is pressed, the antenna sends out a challenge to the keyless entry transmitter, which begins the passive entry communications.

### Immobilizer Coil Antenna

This antenna is located in the front of the center console.

The Immobilizer antenna coil is used for vehicle starting functions and for learning vehicle keys. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur. If the transmitter battery is dead, weak, or the RF signal is being interrupted, the transmitter may be placed in the pocket to create a low powered coupling between the transmitter and immobilizer coil antenna, allowing communications to occur and enabling vehicle starting.

### Rear Console Antenna

This antenna is located in the rear of the center console.

The rear console antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

### Rear Compartment Antenna (If Equipped)

This antenna is located near the center of the rear compartment area.

The rear compartment antenna is used for vehicle starting functions. When the ignition mode switch is pressed, the antenna is energized or "pinged". This emits a low frequency challenge signal that is received by the keyless entry transmitter. The transmitter will then reply to this challenge with a response and, if correct, vehicle starting will occur.

### OnStar® Remote Link

A vehicle operator may have the ability to perform some of the keyless entry functions using applications on personal devices such as smart phones. Refer to *OnStar Description and Operation 6-8*.

### Body Control Module (BCM)

The BCM is a multi-function module that performs the following functions:

- Receive and authenticate active transmitter and keyless start/entry signals from the remote control door lock receiver
- Determines the function requested by the transmitter signal
- Performs the function requested by the transmitter signal
- Activating vehicle antennas for passive keyless entry functions
- Activating vehicle antennas for keyless start functions
- Backup control for the ECM accessory wakeup and the run/crank relay
- If equipped, controls the electronic steering column lock
- Receiver of the exterior door handle switch inputs and door open switch (not the door ajar switch)
- Ignition mode switch monitoring

### Unlock Driver Door Only – Active

Momentarily press the transmitter UNLOCK button in order to perform the following functions:

- Unlock only the driver door or all doors, if enabled through personalization
- Illuminate the interior lamps for a determined length of time, or until the ignition is turned ON
- Flash the exterior lights, if enabled through personalization
- Disarm the Content Theft Deterrent (CTD) system
- Deactivate the CTD system when in the alarm mode

### Unlock All Doors – Second Operation – Active

Momentarily press the transmitter UNLOCK button a second time, within 5 seconds of the first press, to perform the following function:

Unlock the remaining doors

### Unlock Driver Door Only – Passive

If enabled through personalization, approach the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock and open only the driver door
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

### Unlock All Doors – Passive

Approach any non driver door (front or rear) or, if enabled through personalization, the driver door with a valid keyless entry transmitter and press the door handle button to perform the following functions:

- Unlock all vehicle doors
- Disarm the CTD system, if equipped
- Deactivate the CTD system when in the alarm mode

### Lock All Doors – Active

Press the transmitter LOCK button to perform the following functions:

- Lock all vehicle doors
- Immediately turn off the interior lamps
- Flash the exterior lights, if enabled through personalization
- Chirp the horn, if enabled through personalization
- Arm the CTD system

### Lock All Doors – Passive

Exit the vehicle (with ignition off) with the keyless entry transmitter to automatically perform the following functions, if equipped.

- Lock all vehicle doors after a delay
- Flash the exterior lights, if enabled through personalization
- Chirp horn, if enabled through personalization
- Arm the CTD system

When all doors are closed, they can also be locked from the exterior by operating a front door handle button or touch pad while having a valid transmitter within range. Vehicles equipped with a rear door button can also lock all doors from the rear doors.

### Rear Compartment Lid Release – Active (If Equipped)

If the vehicle transaxle is in PARK or NEUTRAL, a double press of the transmitter rear compartment release button will open the rear compartment lid.

### Rear Compartment Lid Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the rear compartment lid release touch pad. The rear compartment lid will open.

### Tailgate Release – Passive (If Equipped)

Approach the rear of a locked vehicle with a valid keyless entry transmitter. Press the tailgate release touch pad. The rear tailgate will open.

### Vehicle Locator/Panic Alarm/Active

A single press of the panic button performs the following functions. Some functions may be dependent on personalization settings:

- Pulses the horn three times
- Flashes the exterior lamps three times

A press and hold of the panic button performs the following functions:

- Pulses the horn and flashes the parking lamps for 30 second or until the following conditions occur:
  - The panic button is pressed
  - The ignition switch is turned to the RUN position with a valid key

### Remote Vehicle Start/Active (If Equipped)

The remote vehicle start function allows engine starting while not in the vehicle. It also allows the vehicle HVAC system and other vehicle systems to enable, providing a comfortable vehicle upon entry. The remote vehicle start sequence begins by pressing and releasing the remote vehicle start button on the keyless entry transmitter twice. The turn signal lamps will illuminate to indicate the vehicle has received the remote start request. Each time a remote vehicle start is performed, the vehicle doors are locked, however they may then be unlocked/locked with the transmitter at any time. Once activated, the engine is allowed to run for 15 minutes. The remote start operation can be repeated as many times as desired up to a total run time of 30 minutes. The remote vehicle start event may be cancelled at any time by pressing only the remote vehicle start button on the transmitter or by entering the vehicle and turning ON the hazard lamps.

### Hood Ajar Switch/Active

The hood switch provides status of the hood to the BCM for remote vehicle start purposes. The switch is integrated into the hood latch assembly. The hood ajar switch provides 2 separate inputs to the BCM. These separate inputs allow the BCM to actively monitor for a hood ajar switch fault.

### Remote Vehicle Start Circuit Description/ Active

The BCM receives a signal from the keyless entry transmitter indicating a remote vehicle start request. The BCM and ECM use the following inputs to verify the system is ready to enable a remote vehicle start event:

- Vehicle is not in valet mode
- Vehicle is in park
- Keyless entry transmitter is not in the vehicle
- The hood is closed
- The hazard switch is OFF
- Vehicle power mode is OFF
- The malfunction indicator lamp (MIL) is not commanded ON by the ECM
- Remote start timer does not equal 0 (the 30 minute maximum time has not been used)

When the BCM determines all conditions meet those required for a remote vehicle start event, a message is sent via serial data to the ECM. While the ECM is in remote vehicle start mode it will cut fuel to the engine if any of the following monitored conditions occur:

- Vehicle speed is greater than 0
- Transmission is not in P
- Excessive engine coolant temperature
- Low oil pressure
- Engine crank time is greater than 30 seconds
- Excessive engine speed
- Accelerator pedal position too high
- Immobilizer system indicates a theft attempt

If any conditions prevent a remote start or cause a remote start operation to be cancelled there is a record of the cause in the scan tool.

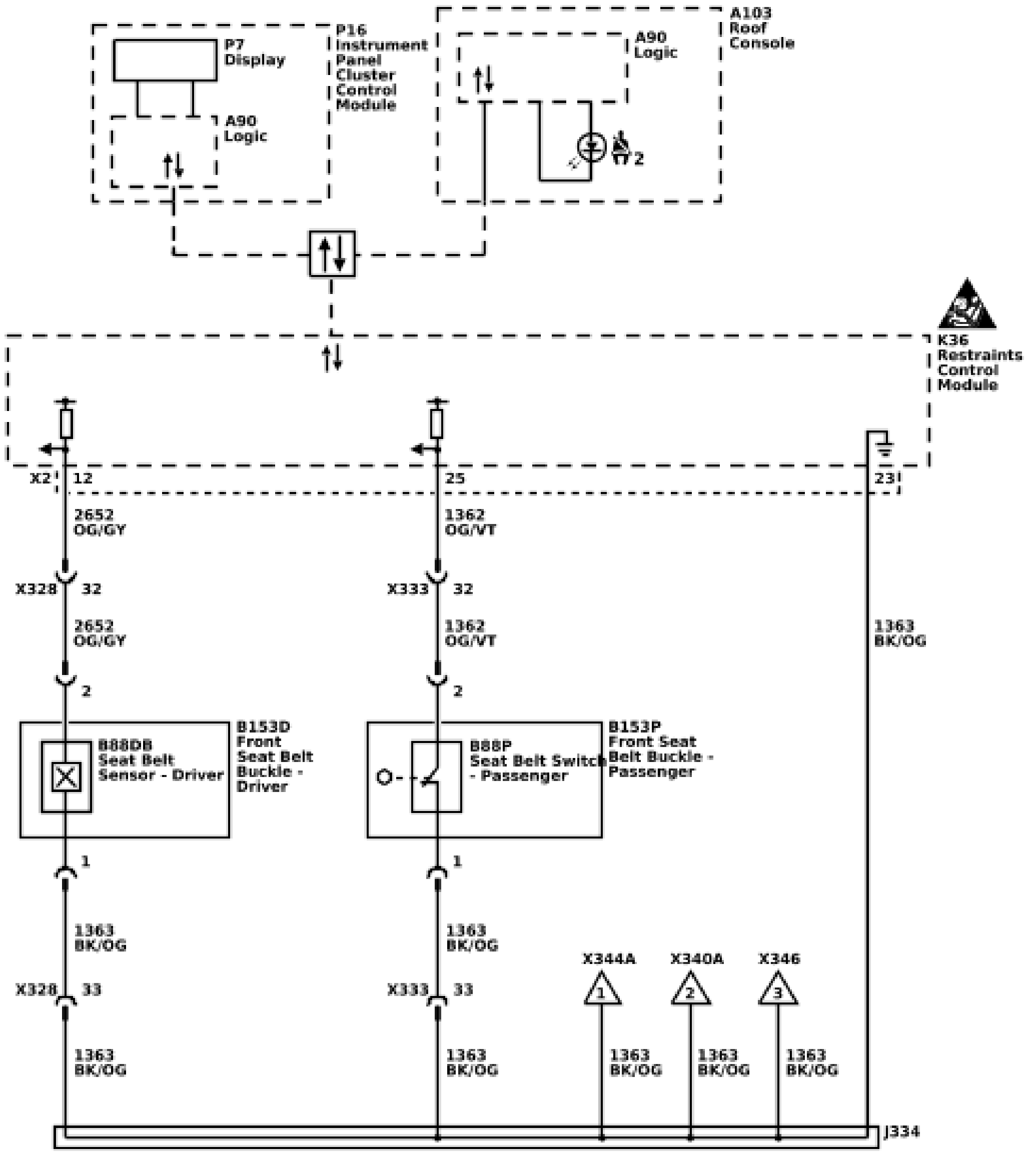
### Keyless Entry Personalization

Vehicle lock/unlock functions and remote vehicle start settings may be personalized for the vehicle. This includes the capability of turning the passive entry system completely off. For functional descriptions and programming instructions, refer to the vehicle owners manual.

# Seat Belts

## Schematic and Routing Diagrams

## Seat Belt Schematics (Front Seat Belt Switches and Indicator)


P7 Display
A90 Logic
P16 Instrument Panel Cluster Control Module
A90 Logic
2
A103 Roof Console
K36 Restraints Control Module
X2
12
25
23
2652 OG/GY
X328
32
2652 OG/GY
2
B88DB Seat Belt Sensor - Driver
B153D Front Seat Belt Buckle - Driver
1
1363 BK/OG
X328
33
1363 BK/OG
1362 OG/VT
X333
32
1362 OG/VT
2
B88P Seat Belt Switch - Passenger
B153P Front Seat Belt Buckle - Passenger
1
1363 BK/OG
X333
33
1363 BK/OG
1363 BK/OG
X344A
1
X340A
2
X346
3
1363 BK/OG
1363 BK/OG
1363 BK/OG
J334

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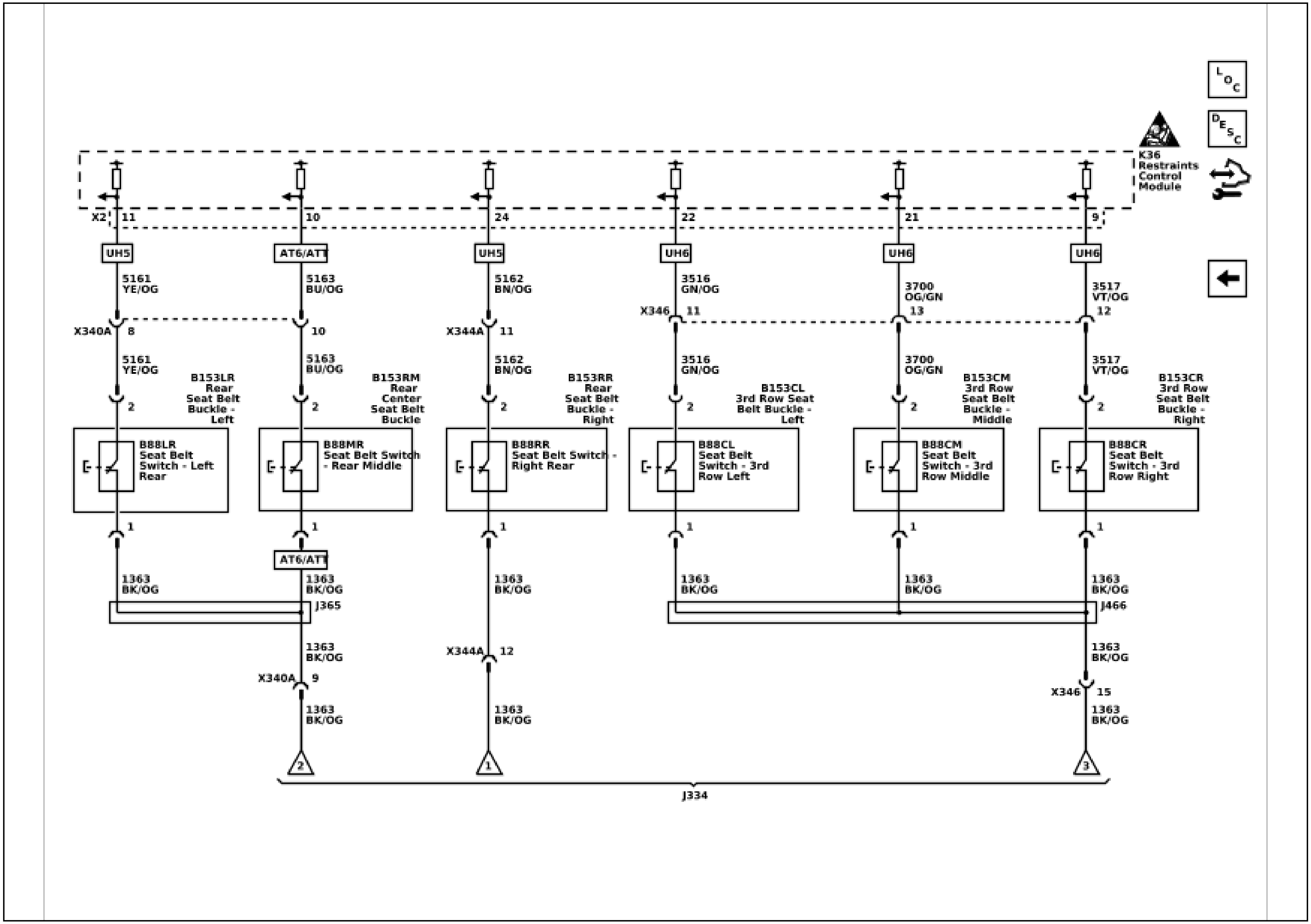
## Seat Belt Schematics (2nd and 3rd Row Seat Belt Switches (UH5 / UH6))


K36
Restraints
Control
Module
X2
11
10
24
22
21
9
UH5
AT6/ATT
UH5
UH6
UH6
UH6
5161
YE/OG
5163
BU/OG
5162
BN/OG
3516
GN/OG
3700
OG/GN
3517
VT/OG
X340A
8
10
X344A
11
X346
11
13
12
B153LR
Rear
Seat Belt
Buckle -
Left
B153RM
Rear
Center
Seat Belt
Buckle
B153RR
Rear
Seat Belt
Buckle -
Right
B153CL
3rd Row Seat
Belt Buckle -
Left
B153CM
3rd Row
Seat Belt
Buckle -
Middle
B153CR
3rd Row
Seat Belt
Buckle -
Right
2
B88LR
Seat Belt
Switch - Left
Rear
B88MR
Seat Belt Switch
- Rear Middle
B88RR
Seat Belt Switch -
Right Rear
B88CL
Seat Belt
Switch - 3rd
Row Left
B88CM
Seat Belt
Switch - 3rd
Row Middle
B88CR
Seat Belt
Switch - 3rd
Row Right
1
AT6/ATT
1363
BK/OG
J365
J466
X344A
12
X340A
9
X346
15
2
1
3
J334

6885720

# Description and Operation

## Seat Belt System Description and Operation

### Restraint System

The primary means of occupant restraint are the front and rear seat belts. Seat belts help to keep the occupants inside the passenger compartment and gradually reduce the impact forces during the following events:

- Frontal impact
- Rear impact
- Side impact
- Rollover event

All seat belt retractors have emergency locks. The retractors remain unlocked during normal operation and under normal driving conditions to allow free movement of the upper body of each occupant. The seat belt webbing is locked into position by a pendulum, which causes a locking bar to engage a cog on the spool of the retractor mechanism, when the following conditions occur:

- Rapid extraction of the seat belt webbing from the retractor
- Abrupt change in vehicle velocity
- Operation of the vehicle on a steep slope

The seat belts have an automatic locking (cinch) feature. The cinch feature is activated when the seat belt webbing is completely extended from the retractor. It prevents the webbing from extending beyond the position at which it can retract. Use of the cinch feature is recommended for securing a child seat. The cinch feature may be cancelled by allowing the webbing to wind back completely into the retractor. After the cinch feature is cancelled, the webbing is unlocked. This vehicle is also equipped with a Supplemental Inflatable Restraint (SIR) system. Refer to *Supplemental Inflatable Restraint System Description and Operation 11-82*.

### Motorized Seat Belts

A motorized seat belt is a seat belt with a motor coupled to the shoulder belt retractor. The motor performs a reversible, pretightening action (retraction) to reduce the slack in the seat belt. The motorized seat belt provides the driver and passenger a sense of safety and, in the case of severe braking or a crash, more quickly couples the occupant to the vehicle, enhancing the safety to the occupant.

**Motorized seat belts monitor vehicle information to determine when to perform each of the following retractions**

- Full retraction for such situations but not limited to: panic braking and or skidding
- Dynamic support for lateral and longitudinal dynamics
- Slack removal when the vehicle speed above enable speed

**Preconditions for motorized seat belt retractions**

- Seat belt buckle is latched
- Vehicle speed greater than or equal to 25 kph (16 mph)
- All messages on serial data are received as valid

**Triggers that may cause motorized seat belt retractions**

- Emergency Braking
- Sudden Emergency / Panic Braking
- High Vehicle Deceleration Detection
- Ice Braking Detection
- Oversteer and Understeer

**Motorized seat belt inputs**

- Vehicle Power Mode
- Transmission Gear
- Wheel Speeds
- Vehicle Acceleration
- Accelerator Pedal Position
- Steering Wheel Angle and Gradient
- Yaw Rate and Lat/Long Acceleration
- Brake Pedal Position, Gradient, Pressure, Initial Travel
- Vehicle Stability

**Motorized seat belt output signals**

- Driver information center message – motorized seat belt Failed “Service Automatic Seatbelt Tightening”
- Driver information center message – motorized seat belt Unavailable “Automatic Seatbelt Tightening Unavailable”

Motorized seat belt retractions are inhibited when seat belt unbuckled.

Driver and passenger motorized seat belts operate independently.

## Front Seat Belt System

The front seat belt system includes the driver and passenger seat belts, seat belt reminder indicators, retractors, and anchor pretensioners. They are all part of the SIR system, refer to Supplemental Inflatable Restraint System Description and Operation 11-82 . The driver seat belt reminder indicator is controlled by a switch in the driver seat belt buckle. The passenger seat belt reminder indicator is controlled by a switch in the passenger seat belt buckle and the Restraint Occupant Classification System Module. For more on the Restraint Occupant Classification System Module, refer to Supplemental Inflatable Restraint System Description and Operation 11-82. When the vehicle is on, the seat belt reminder indicator and tone alarm will operate in the following cases:

- The driver seat belt is unbuckled.
- The passenger seat belt is unbuckled while the seat is occupied.

## Rear Seat Belt System

The rear seat belt system includes the following components:

- The rear seat belt retractor located at the wheelhouse panel and attached to the floor panel.
- The rear seat belt buckles and the center seat belt buckle attached to the seat.

## Child Seat Restraint System

***Warning: A child in a rear-facing child restraint can be seriously injured if the front passenger air bag inflates, because the back of a rear-facing child restraint would be very close to the inflating air bag. NEVER use a rear-facing child restraint in this vehicle. If a forward-facing child restraint is suitable for your child, ALWAYS move the front passenger seat as far back as it will go and then install the child restraint. Be sure the child restraint position does not conflict with any additional requirements provided by the manufacturer. For more information, refer to the vehicle owner's manual and the instructions that came with the child restraint.***

All vehicles are equipped with a dual-mode type retractor with emergency and automatic locking features. The automatic locking feature is for the restraint of a child seat. The child seat can be secured by pulling the seat belt all the way out to lock it, then tightening the seat belt around the child seat. If the child seat has a top strap, the child seat should be anchored. This applies to the seats designed with the top strap provision and for the vehicles sold in Canada. To ensure the correct top strap angle, the child seat is only to be used at the seating position for which the top strap anchor is installed. The child seat should be installed and secured according to the manufacturer's directions.

## Seat Belt Reminder Indicators

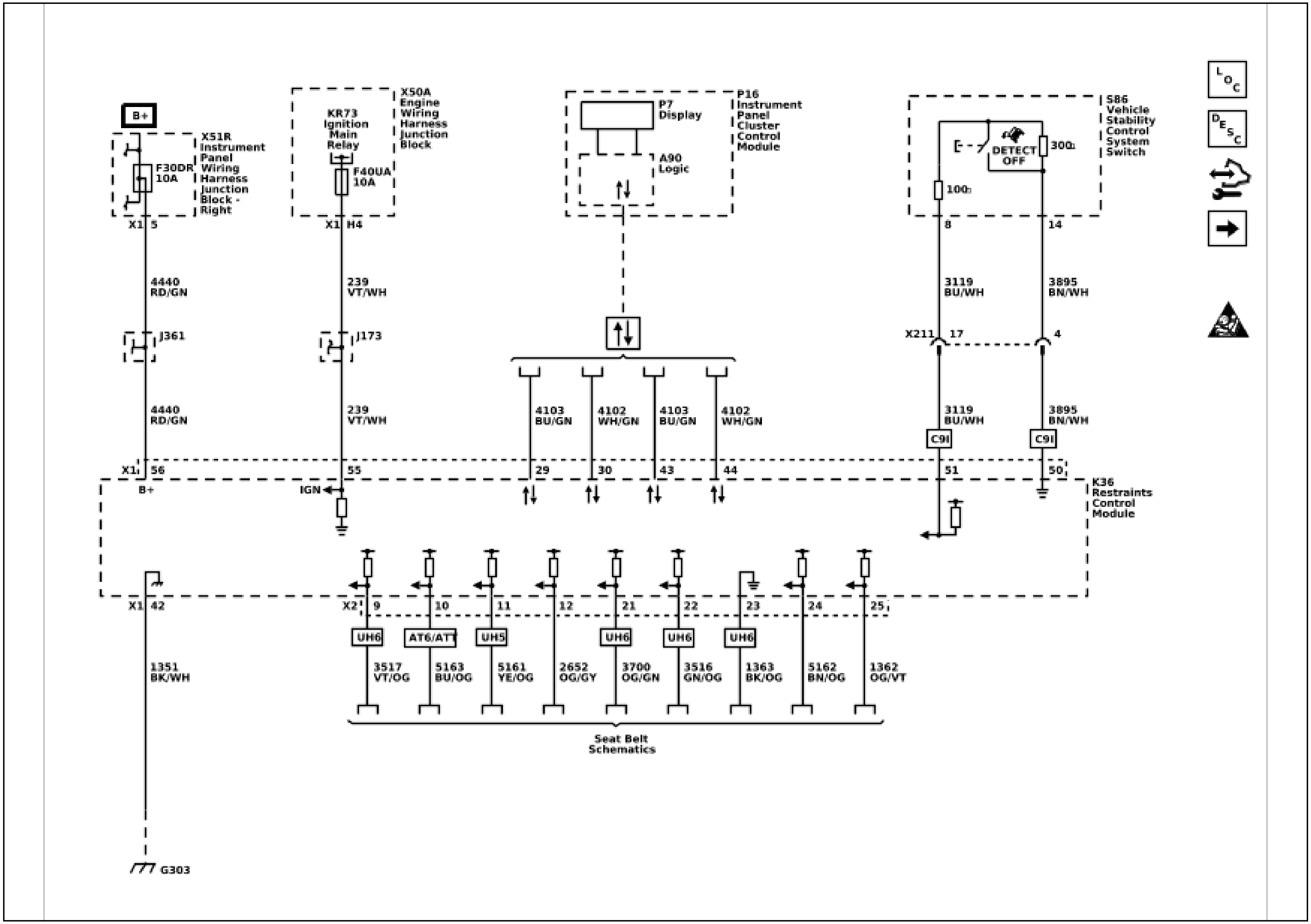
There is a driver seat belt reminder indicator located on the instrument cluster and a passenger seat belt reminder located on the overhead console. There also may have a rear seat belt reminder located in the instrument cluster. The state of the seat belt reminder indicators is determined by the Restraints Control Module. The seat belt reminder indicator illuminates under the following conditions:

- The Restraints Control Module sends the status of the driver seat belt to the instrument cluster via serial data. The passenger seat belt status is sent to the driver information center via serial data. The rear seat belt status is sent to the driver information center via serial data. If any of the seat belts are unfastened, the instrument cluster will send a message requesting a chime sound to be turned ON after a system check.

# Supplemental Restraints

## Schematic and Routing Diagrams

## SIR Schematics (Module Power, Ground, Serial Data, Controls, Indicators, and Subsystem References)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X1 5
4440 RD/GN
J361
4440 RD/GN
X1 56
B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F40UA 10A
X1 H4
239 VT/WH
J173
239 VT/WH
55
IGN
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
4103 BU/GN
4102 WH/GN
4103 BU/GN
4102 WH/GN
29
30
43
44
S86 Vehicle Stability Control System Switch
DETECT OFF
100Ω
300Ω
8
14
3119 BU/WH
3895 BN/WH
X211 17
4
3119 BU/WH
3895 BN/WH
C9I
C9I
51
50
K36 Restraints Control Module
X1 42
1351 BK/WH
G303
X2 9
10
11
12
21
22
23
24
25
UH6
AT6/AT7
UH5
UH6
UH6
UH6
3517 VT/OG
5163 BU/OG
5161 YE/OG
2652 OG/GY
3700 OG/GN
3516 GN/OG
1363 BK/OG
5162 BN/OG
1362 OG/VT
Seat Belt Schematics
L O C
D E S C
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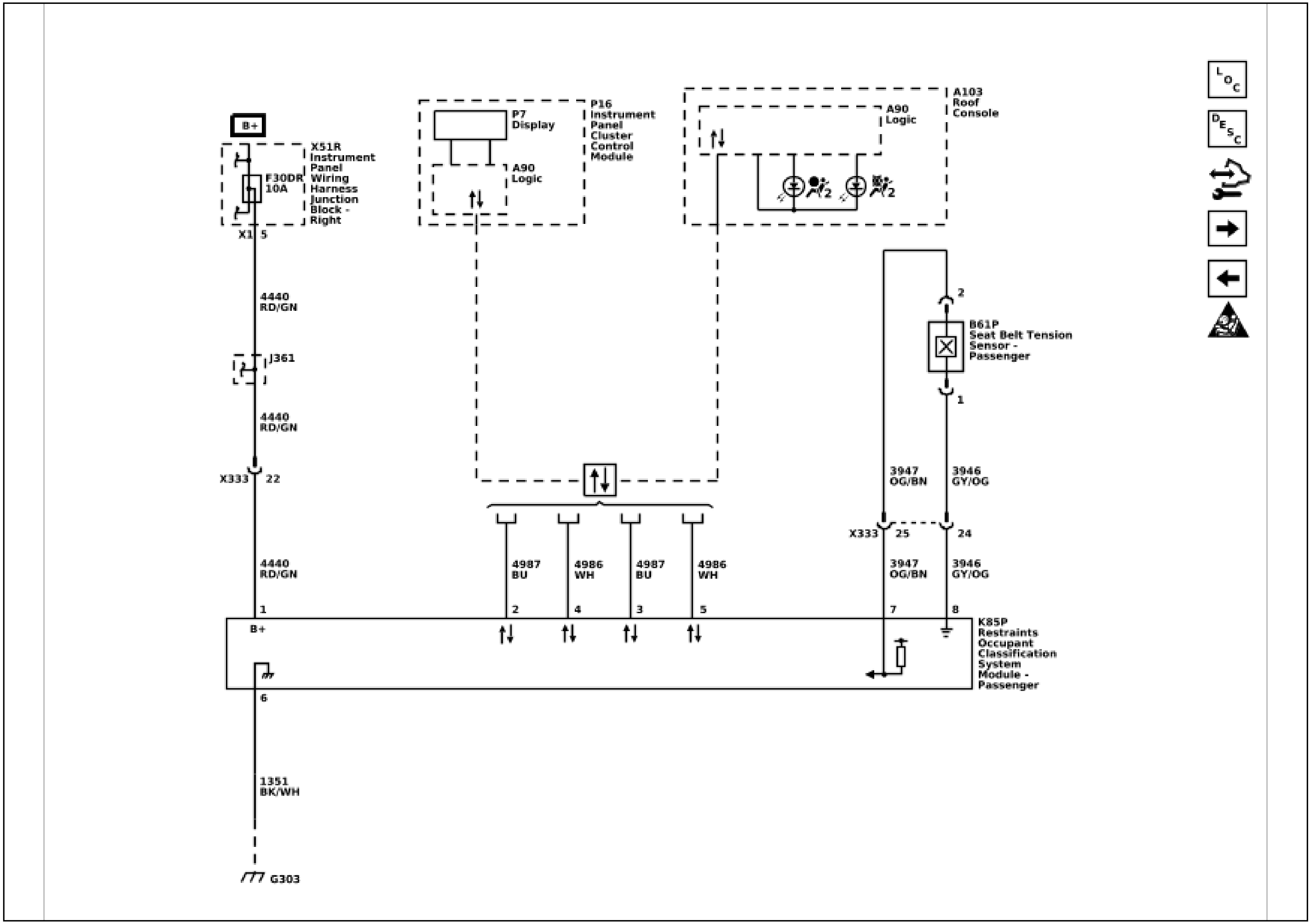
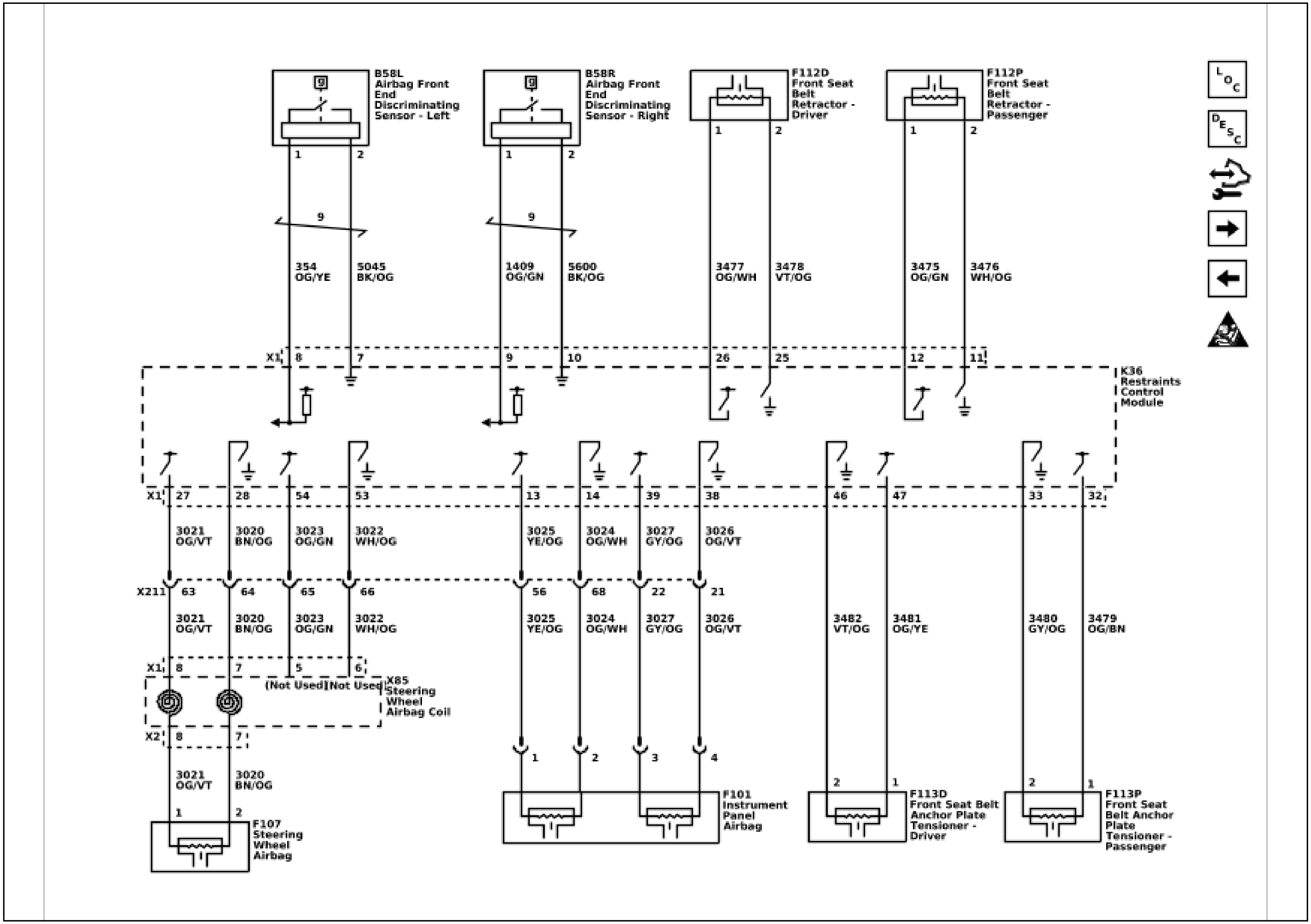
## SIR Schematics (Passenger Presence Module)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F30DR 10A
X1 5
4440 RD/GN
J361
4440 RD/GN
X333 22
4440 RD/GN
1
B+
6
1351 BK/WH
G303
P7 Display
A90 Logic
P16 Instrument Panel Cluster Control Module
A90 Logic
A103 Roof Console
2
2
4987 BU
4986 WH
4987 BU
4986 WH
2
4
3
5
2
B61P Seat Belt Tension Sensor - Passenger
1
3947 OG/BN
3946 GY/OG
X333 25
24
3947 OG/BN
3946 GY/OG
7
8
K85P Restraints Occupant Classification System Module - Passenger
L O C
D E S C
6885722

## SIR Schematics (Frontal Impact Sensing and Deployment)


B58L Airbag Front End Discriminating Sensor - Left
B58R Airbag Front End Discriminating Sensor - Right
F112D Front Seat Belt Retractor - Driver
F112P Front Seat Belt Retractor - Passenger
1
2
9
354 OG/YE
5045 BK/OG
1409 OG/GN
5600 BK/OG
3477 OG/WH
3478 VT/OG
3475 OG/GN
3476 WH/OG
X1
8
7
9
10
26
25
12
11
K36 Restraints Control Module
X1
27
28
54
53
13
14
39
38
46
47
33
32
3021 OG/VT
3020 BN/OG
3023 OG/GN
3022 WH/OG
3025 YE/OG
3024 OG/WH
3027 GY/OG
3026 OG/VT
X211
63
64
65
66
56
68
22
21
3482 VT/OG
3481 OG/YE
3480 GY/OG
3479 OG/BN
X1
8
7
5
6
(Not Used)
(Not Used)
X85 Steering Wheel Airbag Coil
X2
8
7
3021 OG/VT
3020 BN/OG
1
2
F107 Steering Wheel Airbag
1
2
3
4
F101 Instrument Panel Airbag
F113D Front Seat Belt Anchor Plate Tensioner - Driver
F113P Front Seat Belt Anchor Plate Tensioner - Passenger
L O C
D E S C

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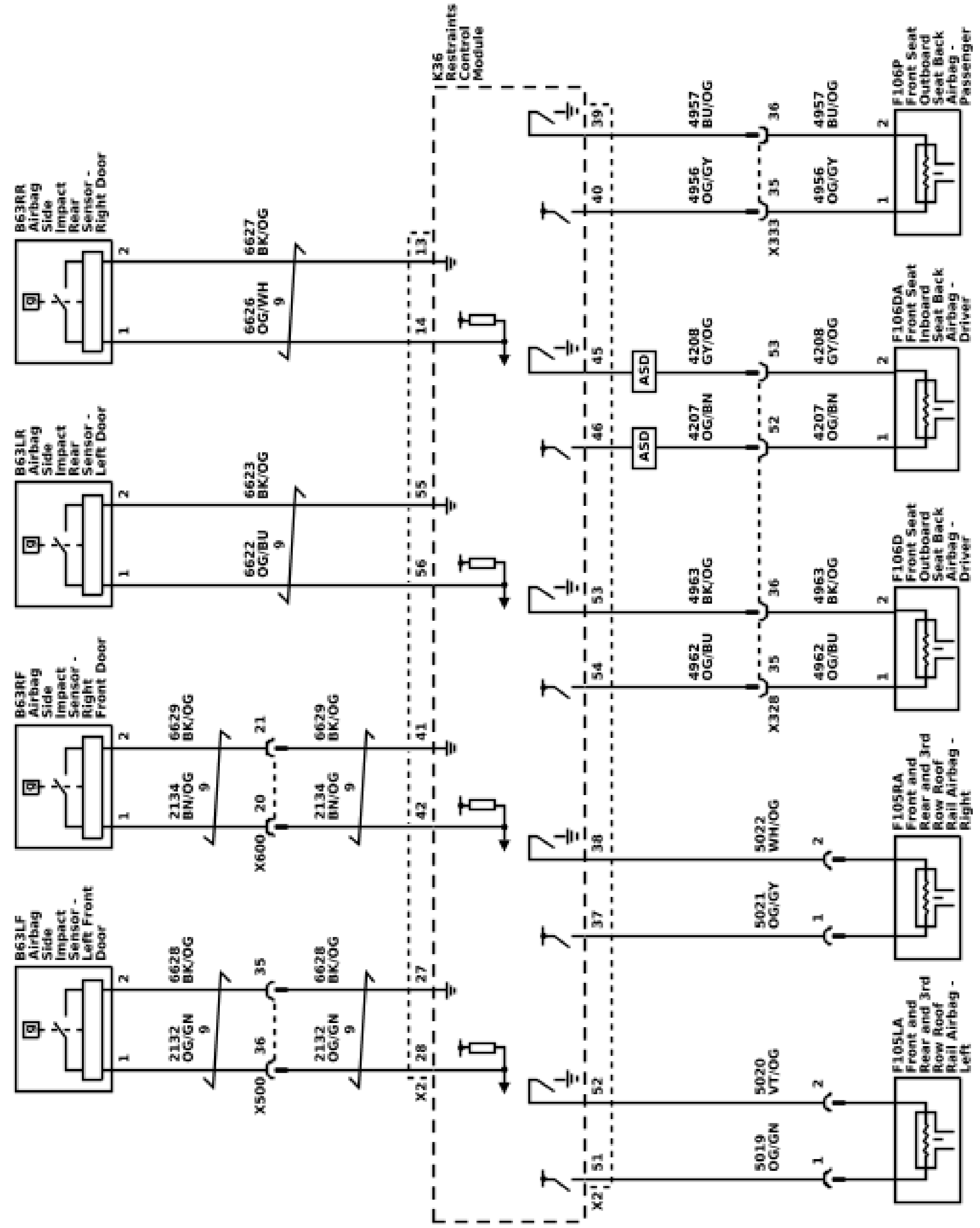
## SIR Schematics (Side Impact Sensing and Deployment)


B63LF Airbag Side Impact Sensor - Left Front Door
B63RF Airbag Side Impact Sensor - Right Front Door
B63LR Airbag Side Impact Rear Sensor - Left Door
B63RR Airbag Side Impact Rear Sensor - Right Door
K36 Restraints Control Module
2132 OG/GN 9
6628 BK/OG
2134 BN/OG 9
6629 BK/OG
6622 OG/BU 9
6623 BK/OG
6626 OG/WH 9
6627 BK/OG
X500
X600
X2
X333
X328
5019 OG/GN
5020 VT/OG
5021 OG/GY
5022 WH/OG
4962 OG/BU
4963 BK/OG
4207 OG/BN
4208 GY/OG
4956 OG/GY
4957 BU/OG
ASD
F105LA Front and Rear and 3rd Row Roof Rail Airbag - Left
F105RA Front and Rear and 3rd Row Roof Rail Airbag - Right
F106D Front Seat Outboard Seat Back Airbag - Driver
F106DA Front Seat Inboard Seat Back Airbag - Driver
F106P Front Seat Outboard Seat Back Airbag - Passenger
51
52
37
38
54
53
46
45
40
39
28
27
42
41
56
55
14
13
35
36
20
21
52
53
1
2

# Description and Operation

## Supplemental Inflatable Restraint System Description and Operation

The supplemental inflatable restraint (SIR) system, comprised of the Restraints Control module (RCM), impact sensors, Airbags, Restraint Occupant Classification System Module, and seat belt Pretensioners, supplements the protection offered by the seat belts. The RCM determines the severity of a collision using data collected from impact sensors located at strategic points on the vehicle. The RCM processes the information provided by the sensors to provide the safest combination of Airbag and pretensioner deployment. The RCM will deploy the Airbags and Pretensioners if it detects a collision of sufficient force. If the force of the impact is not sufficient to warrant Airbag deployment, the RCM may still deploy the seat belt Pretensioners. The RCM contains a sensing device that translates vehicle acceleration to an electrical signal. The RCM compares these signals to the threshold values stored in memory. If the signals exceed the stored threshold value, the RCM will determine the severity of the event and may deploy restraints. The RCM continuously monitors the deployment loops and electrical components for malfunctions. Upon detection of a circuit malfunction, the RCM will set a DTC and illuminate the SIR system Airbag indicator.

**Note:** The SIR System may be active up to 30 seconds after the ignition transitions to OFF.

The supplemental inflatable restraint system utilizes the following components:

- Restraints Control Module
- Airbag Indicator
- Airbags
- Seat Belt Pretensioners
- Impact Sensors
- Restraints Occupant Classification System Module (AL0)
- Passenger Airbag Indicator (C99 / AL0)
- Passenger Airbag Disable Switch (C99)
- Seat Belt Tension Sensor
- Seat Belt Indicators
- Event Data Recorder (EDR) Data
- Non-locked event storage overwrite mechanism and over writable event types

### Restraints Control Module

The RCM is the control unit for the SIR system. The RCM contains internal sensors in addition to the external impact sensors. The RCM contains sensors which translate vehicle acceleration into an electrical signal, which may be used by other modules. In the event of a collision, the RCM compares the signals from the internal and external impact sensors to a threshold value stored in memory. When the generated signals exceed the stored value, the RCM will cause current to flow through the appropriate deployment loops to deploy the restraints. The RCM records the SIR system status when a deployment occurs and illuminates the SIR system Airbag indicator. The RCM performs continuous diagnostic monitoring of the SIR system electrical components and circuitry when the ignition is ON. If the RCM detects a malfunction, a DTC will set and the RCM will command the instrument cluster to illuminate the SIR system Airbag indicator, notifying the driver that a malfunction exists. If power is lost during a collision, the RCM maintains a limited energy reserve for deployment of the Airbags. It is important when disabling the SIR system for servicing or rescue operations to allow the limited energy reserve to dissipate, which could take up to 2 minutes.

### Airbag Indicator

The SIR system Airbag indicator, located in the instrument cluster, is used to notify the driver of SIR system malfunctions and verify that the RCM is communicating with the instrument cluster. When the ignition is turned ON, the RCM is active. The instrument cluster will momentarily turn on the SIR system Airbag indicator. While the indicator is on, the RCM conducts tests on all SIR system components and circuits. If no malfunctions are detected the RCM will communicate with the instrument cluster through the serial data circuit and command the SIR system Airbag indicator to turn OFF. The RCM provides continuous monitoring of the SIR system components and circuits by conducting a sequence of checks. If a malfunction is detected the RCM will set a DTC and command the instrument cluster to illuminate the SIR system Airbag indicator via serial data. The presence of an SIR system malfunction could result in non-deployment of the inflatable restraints or deployment in conditions that normally would not warrant deployment. The SIR system Airbag indicator will remain on for the duration of the malfunction or until the system has been repaired.

### Airbags

The vehicle will contain a number of Airbags, depending on vehicle available and optional equipment:

- Steering wheel
- Instrument panel
- Driver seat
- Passenger seat
- Instrument Panel Lower Airbag
- Passenger knee
- Left roof rail
- Right roof rail

To view the locations of the Airbags refer to: *Master Electrical Component List 9-988*.

Airbags contain a housing, inflatable Airbag, an initiating device, a canister of gas generating material and, in some cases, stored compressed gas. Each Airbag has a discrete deployment loop to supply current and deploy the Airbag. The current passing through the Airbags ignite the material in the canister producing a rapid generation of gas and is some cases, the release of compressed gas. The gas produced from this reaction rapidly inflates the Airbag. Once the Airbag is inflated, it deflates through the Airbag vent holes and/or the bag fabric.

The steering wheel and instrument panel Airbag will either be a dual-stage or a single stage design. A dual-stage Airbag uses two stages of deployment, which varies the amount of restraint to the occupant according to the collision severity. For moderate frontal collisions, the Airbag deploys at less than full deployment which consists of stage 1 of the Airbag. During a more severe frontal collision, a full deployment is initiated which consists of stage 1 and stage 2 of the Airbag.

**Seat Belt Pretensioners**
The vehicle will contain a number of seat belt Pretensioners, depending on vehicle available and optional equipment:

- Driver – Seat belt anchor
- Driver – Seat belt retractor
- Passenger – Seat belt anchor
- Passenger – Seat belt retractor
- Rear Outboard Left/Right Passenger – Seat belt retractor

To view the locations of the Airbags refer to: *Master Electrical Component List 9-988*.

The seat belt Pretensioners consist of a housing, seat belt retractor, seat belt anchor, seat belt webbing, initiator, and a canister of gas generating materials. The initiator is part of the seat belt pretensioner deployment loop. When the vehicle is involved in a collision of sufficient force, the RCM causes current to flow through the seat belt deployment loops to the initiator. Current passing through the initiator ignites the material in the canister producing a rapid generation of gas. The gas produced from this reaction deploys the seat belt Pretensioners which removes the slack in the seat belts. Depending on the severity of the collision, the seat belt Pretensioners may deploy without the frontal inflator modules deploying, or they will deploy immediately before the frontal inflator modules deploy.

**Impact Sensors**
The vehicle will contain a number of impact sensors, depending on vehicle available and optional equipment:

- Front Impact Sensor — Left
- Front Impact Sensor — Right
- Side Impact Sensor — Left Front
- Side Impact Sensor — Right Front
- Side Impact Sensor — Left Middle
- Side Impact Sensor — Right Middle
- Side Impact Sensor — Left Rear
- Side Impact Sensor — Right Rear

To view the locations of the Airbags refer to: *Master Electrical Component List 9-988*.

The impact sensors contain a sensing device which monitors vehicle acceleration or pressure to detect collisions that are severe enough to warrant Airbag deployment. The impact sensors are not part of the deployment loop, but instead provide input to the RCM.

**Restraints Occupant Classification System Module**
The Restraints Occupant Classification System Module is used to monitor the type of occupant that is sitting in the front passenger seat and communicate the status to the RCM. The RCM then uses this information to determine whether to enable or suppress the deployment of the passenger instrument panel Airbag. The Restraints Occupant Classification System Module consists of an electronic control module, a sensor mat in the seat, Seat Belt Tension Sensor (if equipped), and a harness.

**Passenger Airbag Indicator**
The passenger Airbag indicator identifies the status of the instrument panel Airbag. The RCM will momentarily turn on the passenger Airbag indicators after ignition is turned ON. If an occupant is not detected in the passenger seat or the occupant type is not suitable for Airbag deployment, the Restraints Control module will illuminate the passenger Airbag OFF indicator. If an occupant is detected in the passenger seat, the Restraints Control module will illuminate the passenger Airbag ON indicator.

**Seat Belt Tension Sensor**
The seat belt tension sensor (if equipped) is mounted on the passenger seat belt retractor to measure the seat belt tension. If the shoulder portion of a passenger seat belt is fully extended, the infant car seat restraint locking feature may be engaged, disabling the passenger Airbag.

**Passenger Airbag Disable Switch**
The passenger Airbag disable switch provides the means to manually disable the ability for the passenger instrument panel Airbag to deploy. The vehicle has a

passenger Airbag status indicator to inform the driver when the passenger Airbag is on or off based on the disable switch position.

### Seat Belt Indicators

The seat belt indicators are controlled by the RCM. For further information on seat belt indicators refer to: *Seat Belt System Description and Operation 11-75*.

### Event Data Recorder (EDR) Data

The vehicle is equipped with an event data recorder (EDR). When a specific collision or similar condition occurs (such as airbag deployment or hitting a road obstacle), the recorder records the data related to vehicle dynamics and safety systems within a short period of time, such as the status of occupant safety components, status of accelerator/brake pedals, vehicle speed, etc., helping understand the operating conditions of vehicle systems.

The data elements recorded by EDR mainly include the following data:

| No. | Data Element | Data Source | Collection Method |
|---|---|---|---|
| A1 | Longitudinal delta V | EDR acceleration sensor in EDR controller | None |
| A2 | Maximum recorded longitudinal delta V | EDR acceleration sensor in EDR controller | None |
| A3 | Time to maximum recorded longitudinal delta V | EDR acceleration sensor in EDR controller | None |
| A4 | Clipping flag | Since B1 lateral acceleration has been recorded, it is not necessary to record the clipping flag | None |
| A5 | Vehicle velocity | Wheel speed sensor, transmitted via CAN bus after calculation | CAN bus |
| A6 | Service brake, on or off | Brake pedal position sensor, transmitted via CAN bus after calculation | CAN bus |
| A7 | Driver safety belt status | Driver seat belt buckle | Hard wire |
| A8 | Accelerator pedal position, percentage of fully open position | Accelerator pedal position sensor, transmitted via CAN bus after calculation | CAN bus |
| A9 | Revolution Per Minute (RPM) | Engine crankshaft position sensor, transmitted via CAN bus after calculation<br>*Not required for electric vehicles | CAN bus<br>*Not required for electric vehicles |
| A10 | Power-on cycle at event | EDR controller | None |
| A11 | Power-on cycle at reading | EDR controller | None |
| A12 | Complete status of event data record | EDR controller | None |
| A13 | Time interval from this event to the last event | EDR controller | None |
| A14 | Vehicle Identification Number(VIN) | EDR controller | None |
| A15 | ECU hardware number | EDR controller | None |
| A16 | ECU serial number | EDR controller | None |
| A17 | ECU software number | EDR controller | None |
| B1 | Longitudinal acceleration | EDR acceleration sensor in EDR controller | None |

No contents related to intelligent control are available now for Level A elements above.

The recorded vehicle speed data is obtained from the on-board CAN bus. They are obtained by a vehicle speed sensor connected to other modules on the vehicle (such as engine control or transmission control module or new energy control, etc.), and transmitted and released via CAN bus after calculation.

The above data can be extracted by purchased general on-board diagnostic tools that meet the requirements in SAE J1962 and ISO 15765 and their referenced standards.

**Non-locked event storage overwrite mechanism and over writable event types**

Locking Conditions:

- Deployment event of irreversible restraints will be permanently locked.

- Non-deployment events will be locked, but become non-locked events after 255 ignition cycles.

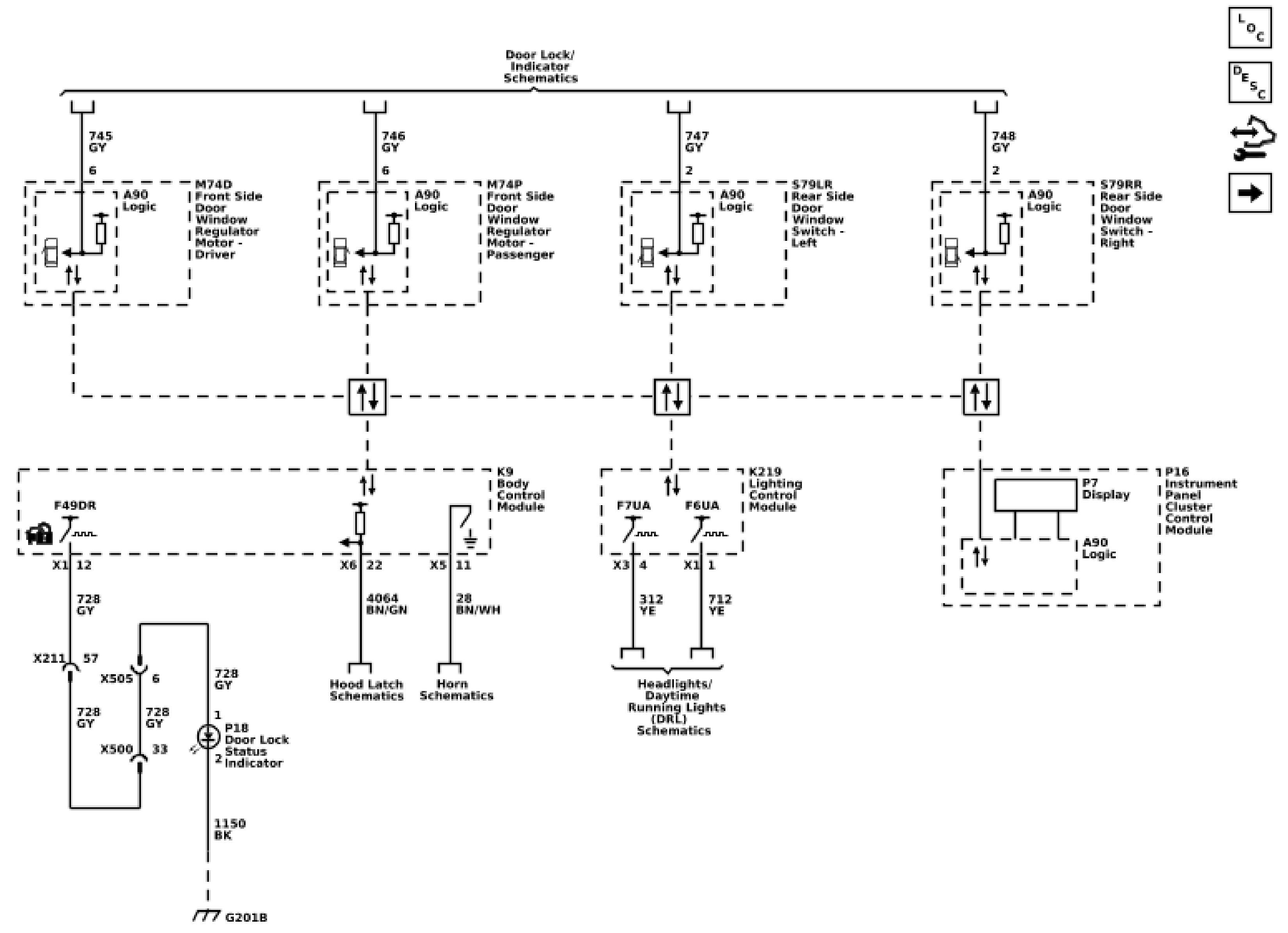
Overwrite Mechanism:

- Permanently locked events will not be overwritten. Only the non-locked EDR events can be overwritten, overwriting the earliest event first.
- If the EDR storage space is insufficient, the deployment events of irreversible restraints can overwrite any non-deployment events.
- If the EDR storage space is insuficcient, the non-deployment events can overwrite any non-deployment events that become non-locked after 255 ignition cycles.

# Theft Deterrent

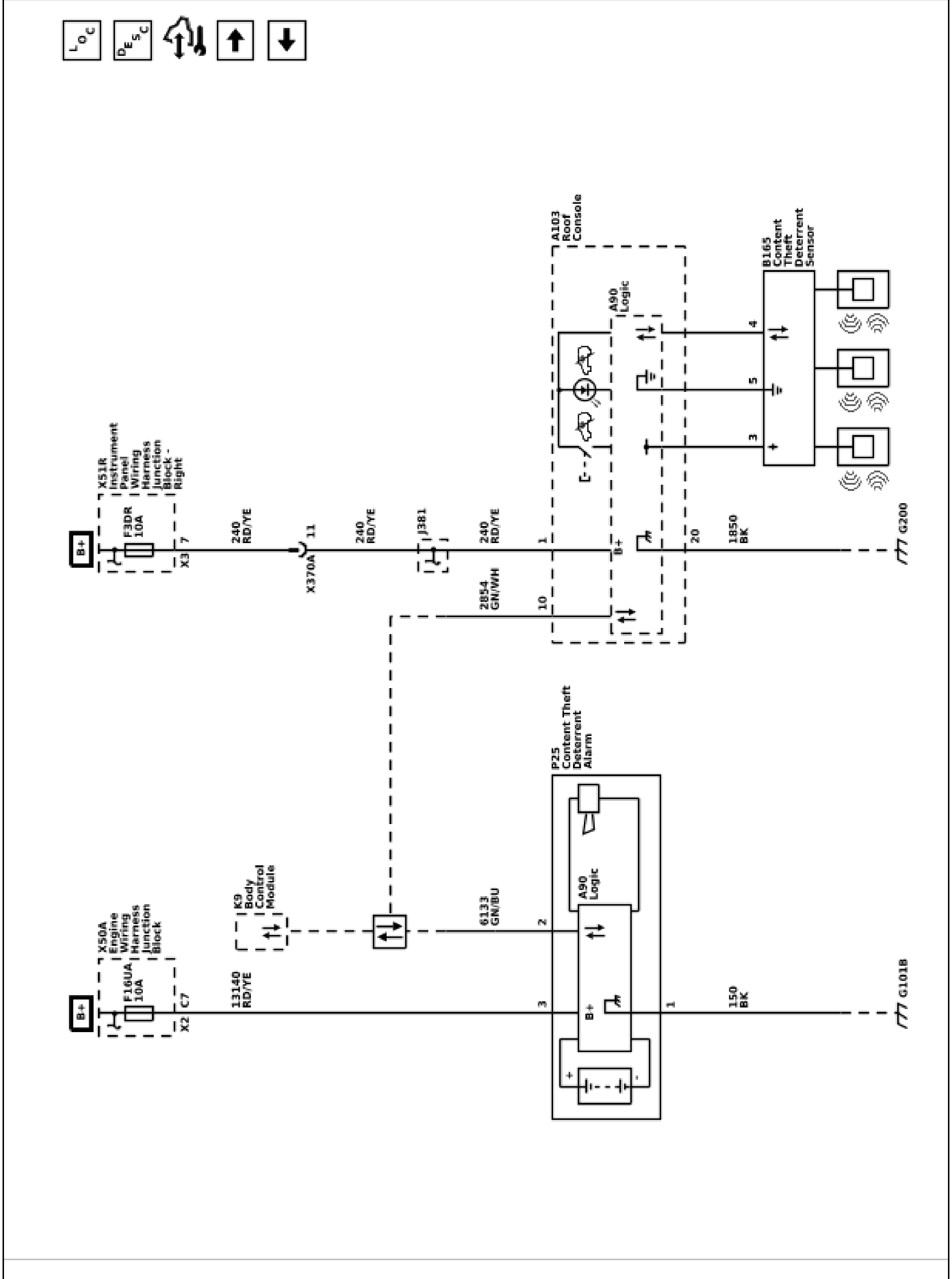
## Schematic and Routing Diagrams

## Theft Deterrent System Schematics (Content Theft Deterrent)

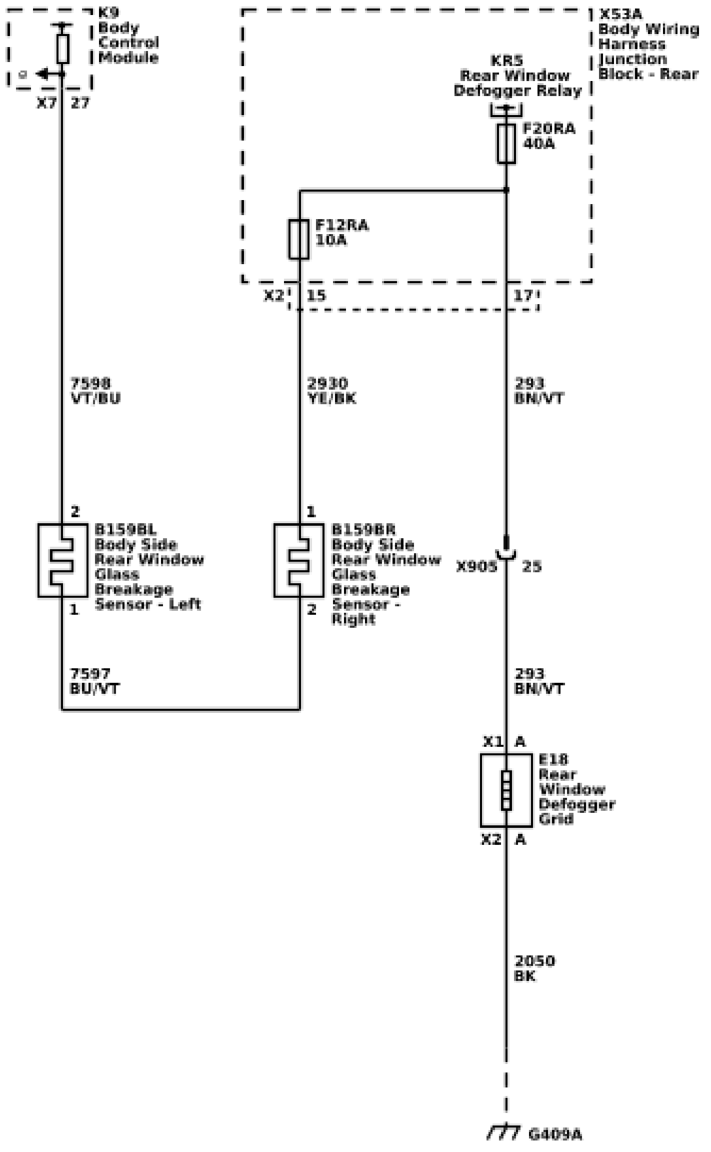

L O C
D E S C
Door Lock/ Indicator Schematics
745 GY
6
A90 Logic
M74D Front Side Door Window Regulator Motor - Driver
746 GY
6
A90 Logic
M74P Front Side Door Window Regulator Motor - Passenger
747 GY
2
A90 Logic
S79LR Rear Side Door Window Switch - Left
748 GY
2
A90 Logic
S79RR Rear Side Door Window Switch - Right
K9 Body Control Module
F49DR
X1 12
X6 22
X5 11
728 GY
4064 BN/GN
28 BN/WH
Hood Latch Schematics
Horn Schematics
X211 57
X505 6
X500 33
728 GY
728 GY
728 GY
1
P18 Door Lock Status Indicator
2
1150 BK
G201B
K219 Lighting Control Module
F7UA
F6UA
X3 4
X1 1
312 YE
712 YE
Headlights/ Daytime Running Lights (DRL) Schematics
P7 Display
P16 Instrument Panel Cluster Control Module
A90 Logic

6885725

## Theft Deterrent System Schematics (Content theft Deterrent Alarm (UTR))


6885726
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F3DR 10A
X3 7
240 RD/YE
X370A 11
240 RD/YE
J381
240 RD/YE
1
2854 GN/WH
10
A103 Roof Console
A90 Logic
B+
20
1850 BK
G200
B165 Content Theft Deterrent Sensor
4
5
3
B+
X50A Engine Wiring Harness Junction Block
F16UA 10A
X2 C7
13140 RD/YE
K9 Body Control Module
6133 GN/BU
2
P25 Content Theft Deterrent Alarm
A90 Logic
3
B+
1
150 BK
G101B

## Theft Deterrent System Schematics (Glass Breakage Sensors (UTU))


K9
Body
Control
Module
X7 27
X53A
Body Wiring
Harness
Junction
Block - Rear
KR5
Rear Window
Defogger Relay
F20RA
40A
F12RA
10A
X2 15
17
7598
VT/BU
2930
YE/BK
293
BN/VT
2
B159BL
Body Side
Rear Window
Glass
Breakage
Sensor - Left
1
1
B159BR
Body Side
Rear Window
Glass
Breakage
Sensor -
Right
2
X905 25
7597
BU/VT
293
BN/VT
X1 A
E18
Rear
Window
Defogger
Grid
X2 A
2050
BK
G409A

6885727

# Description and Operation

## Theft Systems Description and Operation

When armed, the content theft deterrent system is designed to deter vehicle content theft by pulsing the horns and exterior lamps for approximately 30 seconds when an unauthorized vehicle entry is detected. However, the content theft deterrent system does not affect engine starting.

An unauthorized entry can be any of the following with the content theft deterrent system armed:

- Unauthorized entry into the engine area
- Unauthorized entry into the vehicle compartments
- When any door is opened without using the UNLOCK command from a keyless entry transmitter
- After a battery reconnect, if the battery was disconnected with the content theft deterrent system armed

The components of the content theft deterrent system are:

- Body Control Module (BCM)
- Remote control door lock receiver
- Security indicator
- Door ajar switches
- Hood ajar switch
- Liftgate ajar switch, if equipped
- Intrusion sensor, if equipped
- Intrusion sensor disable switch, if equipped
- Glass breakage sensor, if equipped
- Alarm siren, if equipped

## Arming the Content Theft Deterrent System

Use the following procedure in order to arm the system:

1. Place the vehicle in P (park).
2. Ignition OFF/Vehicle OFF.
3. Open any door.

**Note:** The system is not armed if the doors are locked manually; the power door lock switch or remote keyless entry transmitter must be used to arm the content theft deterrent system.

4. Lock the doors with the power door lock switch or by pressing the LOCK button on the transmitter. The system is in standby mode and will not start the arming timer until all doors are closed.
5. The system will begin the arm sequence immediately after the last door is closed. If the keyless entry transmitter is used to arm the system after the vehicle doors are closed, the arm sequence will begin as soon as the LOCK command is received from the transmitter.
6. Pressing the LOCK button on the keyless entry transmitter a second time will bypass the delayed arming function and force the system to arm.

## Locking the Vehicle Without Arming the Content Theft Deterrent System

Locking the vehicle may be accomplished without arming the content theft deterrent system. Use of the manual door locks will lock the vehicle, but will not arm the content theft deterrent system.

## Disarming an Armed System/Silencing an Alarm

If system arming has been requested by the power door lock switch or the keyless entry transmitter, it must be disarmed.

**Note:** Disconnecting the battery or removing fuses does not disable the arm or alarm modes, since the BCM stores the content theft deterrent mode status in memory.

- To disarm the content theft deterrent system in standby mode, perform one of the following:
  - Press the UNLOCK button on the keyless entry transmitter.
  - Approach the vehicle with a valid keyless entry transmitter and pull the vehicle door handle.
  - Turn the ignition ON/Vehicle ON.
- To disarm the content theft deterrent system in the armed mode (non-event) or when activated (during an alarm event):
  - Press the UNLOCK button on the keyless entry transmitter.
  - Turn the ignition ON/Vehicle ON.

## Content Theft Deterrent Circuit Description

The following is a description of each component used in the content theft deterrent system:

### Body Control Module

The content theft deterrent system is an internal function of the BCM which utilizes serial data and various switch inputs information to perform content theft deterrent functions. When the BCM detects an unauthorized entry, it activates the horns and exterior lamps. The BCM has 4 basic modes (disarmed, standby, armed, and alarm) for operating the content theft deterrent system. The different modes are described below.

1. The BCM has the content theft deterrent system in a disarmed mode until the following conditions are detected:

  - Ignition OFF/Vehicle OFF.
  - Doors locked by either the power door lock switch or the LOCK button on the transmitter.
2. The BCM enters the standby mode when the above conditions are detected. If a door was already opened when the arm mode was requested, the standby mode does not start the timer until the last door is closed.
3. When the last door is closed, a 15 second timer is activated. Once the timer has expired, the BCM enters the armed mode. After this delay, any unauthorized entry will activate the alarm mode.
4. When the BCM detects an unauthorized entry, the BCM enters the alarm mode. The BCM activates the horns and exterior lamps for 30 seconds. This is followed by a three minute time-out with the horn no longer active. If no new intrusions are detected after the time-out, the horn is not active. The system must be disarmed or the intrusion condition removed after the time-out for the system to exit alarm mode.

**Remote Control Door Lock Receiver**
The keyless entry system can arm and disarm the content theft deterrent system. When the remote control door lock receiver receives a door lock or unlock signal from the transmitter, the remote control door lock receiver sends a message to the BCM via serial data to perform the appropriate arm/disarm functions.

**Security Indicator**
The security LED is illuminated on the upper I/P by the BCM. The content theft deterrent system uses the security LED to inform the driver of system status prior to arming.

**Door Ajar Switches**
The content theft deterrent system uses the door ajar switches as a status indicator to activate the alarm. The door ajar switches are monitored by the body control module via a discrete input from each door ajar switch. If the BCM receives a signal indicating a door is opened when the content theft deterrent system is armed, the BCM activates the alarm.

**Hood Ajar Switch**
The content theft deterrent system uses the hood ajar switch as a status indicator to activate the alarm. The BCM monitors the hood ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the hood has been opened when the content theft deterrent system is armed, the BCM activates the alarm.

**Liftgate Ajar Switch**
The content theft deterrent system uses the liftgate ajar switch as a status indicator to activate the alarm. The BCM monitors the liftgate ajar switch via a discrete input from the switch. If the BCM receives a signal indicating the liftgate has been opened when content theft deterrent system is armed, the BCM activates the alarm.

**Intrusion Sensor**
The intrusion sensor is located in the overhead console and uses two ultrasonic sensors to detect any motion inside the vehicle. If motion is detected inside the vehicle while the content theft deterrent system is armed, the system will transition to the alarm mode. The intrusion sensor also acts as an inclination sensor. The inclination sensor determines the vehicles level when the content theft deterrent system is armed. If the vehicle level is changed while the system is armed, such as being lifted by a tow truck or raised with a jack, the alarm will be activated. The intrusion sensor can be disabled using the intrusion sensor disable switch. The intrusion sensor disable switch also shows the intrusion sensor status using a status LED.

**Glass Breakage Sensor**
The glass breakage sensors (if equipped) are located on the rear side windows and are supplied battery voltage at all times. The BCM monitors the glass breakage sensor signal circuit. If the rear side glass is broken, the glass breakage sensor signal circuit will open and the BCM will enter the alarm mode.

**Alarm Siren**
The content theft deterrent system uses the alarm siren as an audible alert device to alert individuals near the vehicle that a vehicle intrusion is occurring. The siren is supplied battery voltage and ground for operation and communicates with the body control module (BCM) via a dedicated LAN circuit.

**Inputs**
The BCM monitors the following inputs for content theft deterrent:

- Door ajar switches
- Keyless entry transmitter LOCK/UNLOCK buttons; a message from the remote control door lock receiver
- Immobilizer status—The BCM uses the immobilizer status for disarming the system or silencing an alarm when the correct vehicle key is used to start the vehicle
- Liftgate ajar switch
- Hood ajar switch
- Intrusion sensor
- Glass breakage sensor

**Outputs**

The BCM controls the following for content theft deterrent:

- Horn relay
- Exterior lamps
- Alarm siren

# Section 12

# Seats

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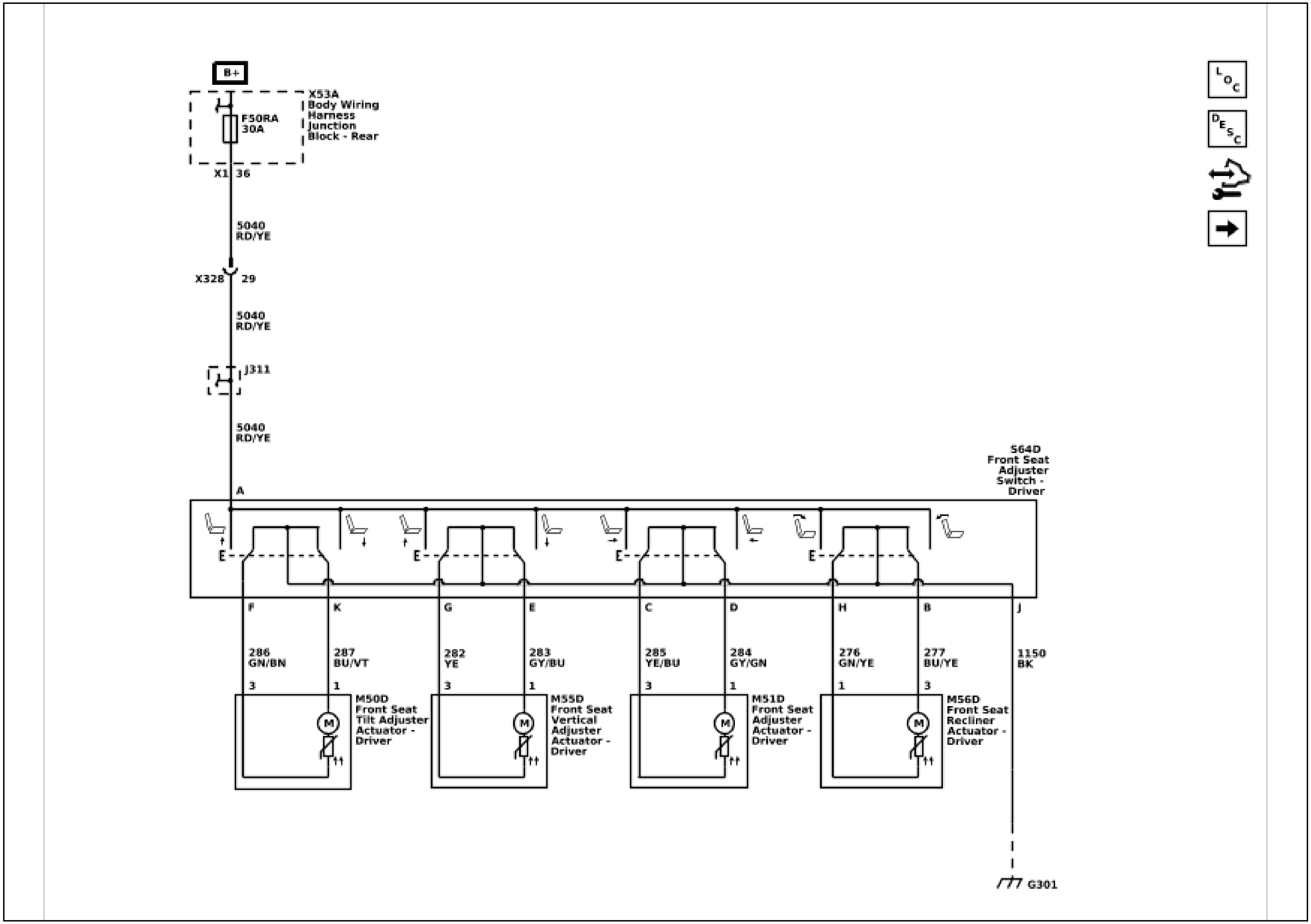
# Seats

## Power Seats

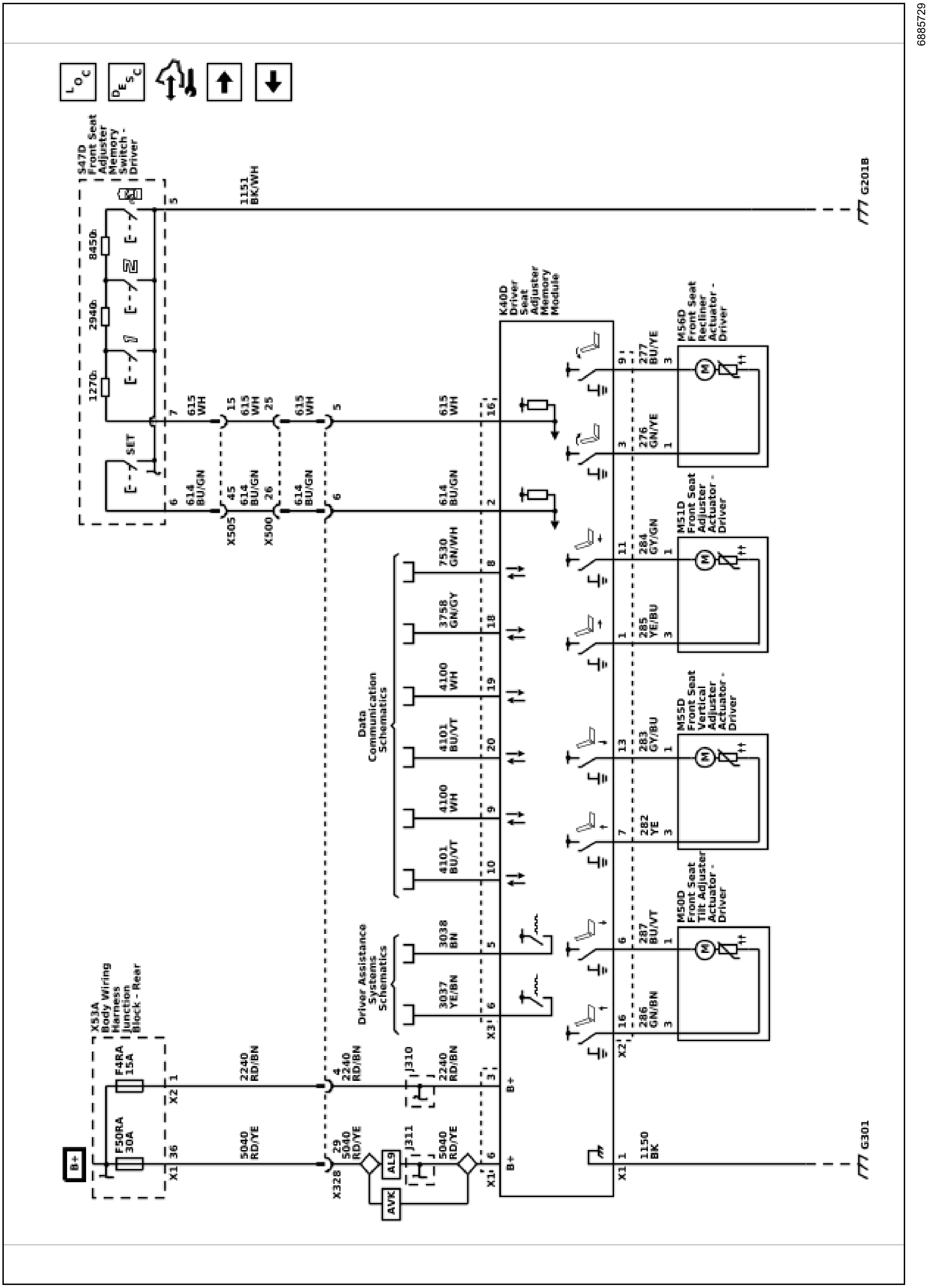
### Schematic and Routing Diagrams

## Driver Seat Schematics (Power Seat (- (A45 / AUN)))

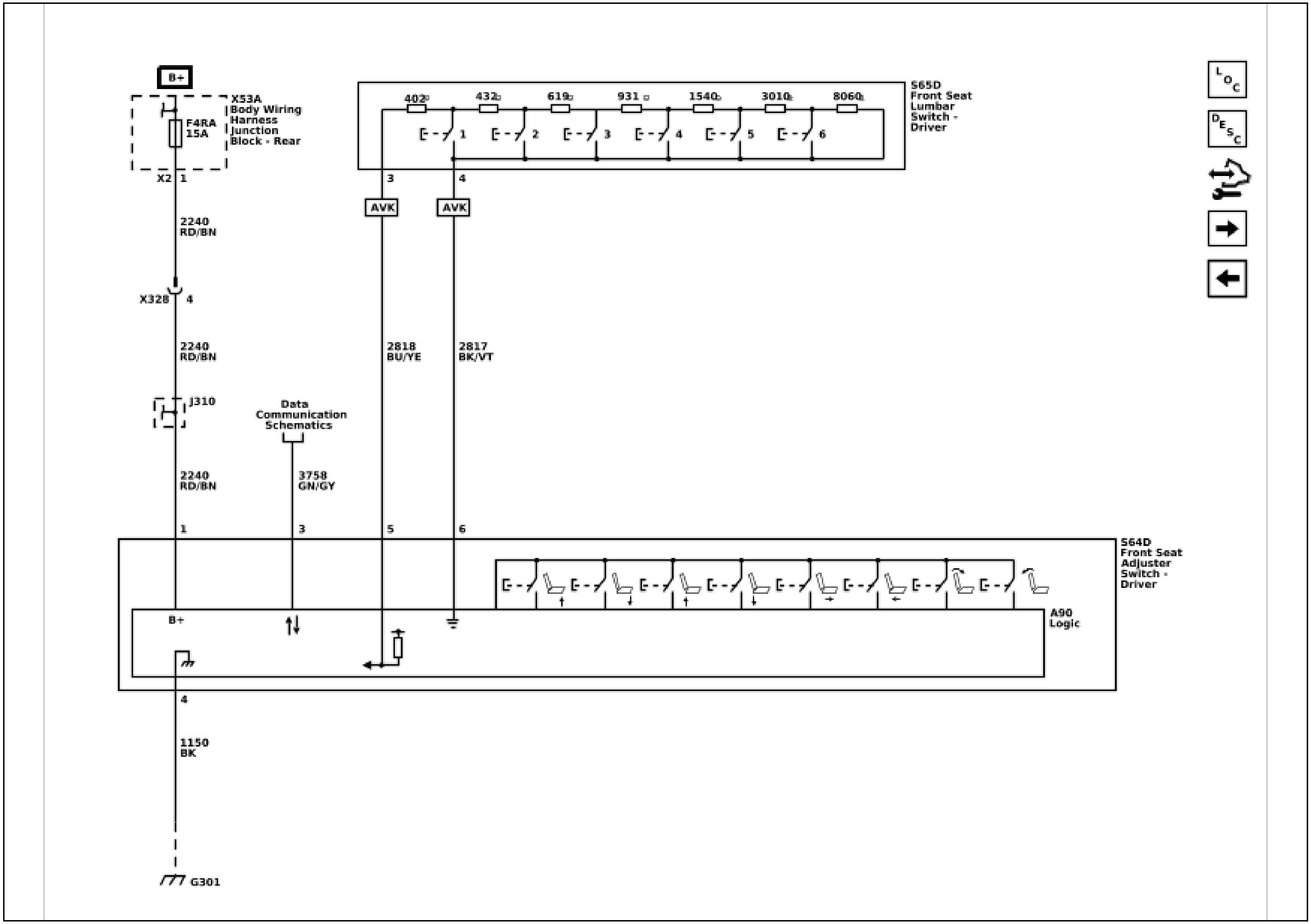

B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F50RA
30A
X1 36
5040
RD/YE
X328 29
5040
RD/YE
J311
5040
RD/YE
A
S64D
Front Seat
Adjuster
Switch -
Driver
E
E
E
E
F
K
G
E
C
D
H
B
J
286
GN/BN
287
BU/VT
282
YE
283
GY/BU
285
YE/BU
284
GY/GN
276
GN/YE
277
BU/YE
1150
BK
3
1
3
1
3
1
1
3
M
M
M
M
M50D
Front Seat
Tilt Adjuster
Actuator -
Driver
M55D
Front Seat
Vertical
Adjuster
Actuator -
Driver
M51D
Front Seat
Adjuster
Actuator -
Driver
M56D
Front Seat
Recliner
Actuator -
Driver
G301
LOC
DESC

6885728

## Driver Seat Schematics (Module Power, Ground, Serial Data, Motors, and Memory Controls (A45 / AUN))

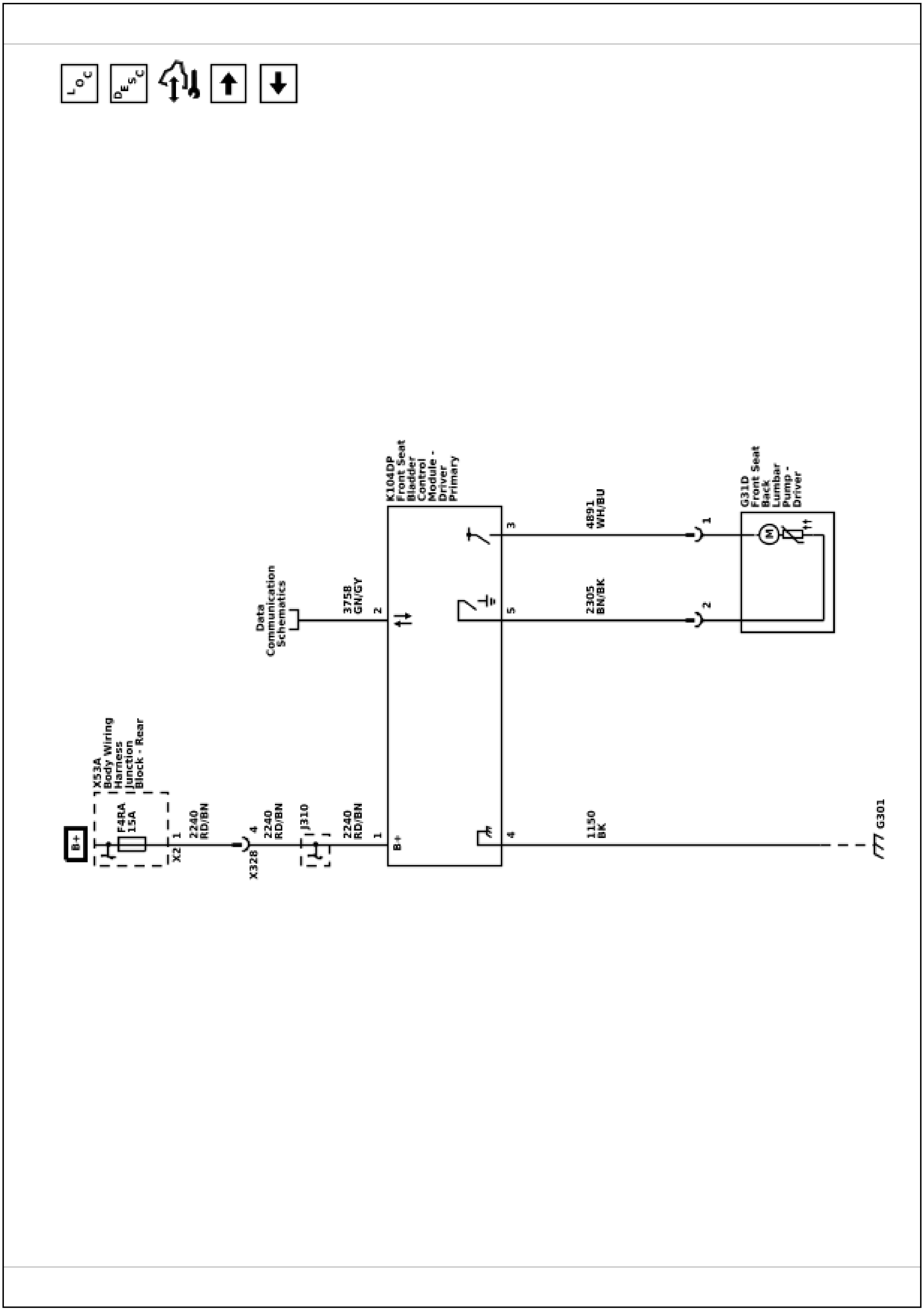

6885729
LOC
DESC
S47D Front Seat Adjuster Memory Switch - Driver
1270Ω
2940Ω
8450Ω
SET
5
1151 BK/WH
G201B
7
615 WH
6
614 BU/GN
X505
15
45
X500
25
26
615 WH
614 BU/GN
16
2
K40D Driver Seat Adjuster Memory Module
9
277 BU/YE
3
M56D Front Seat Recliner Actuator - Driver
3
276 GN/YE
1
11
284 GY/GN
1
M51D Front Seat Adjuster Actuator - Driver
1
285 YE/BU
3
13
283 GY/BU
1
M55D Front Seat Vertical Adjuster Actuator - Driver
7
282 YE
3
6
287 BU/VT
1
M50D Front Seat Tilt Adjuster Actuator - Driver
16
286 GN/BN
3
X2
Data Communication Schematics
7530 GN/WH
8
3758 GN/GY
18
4100 WH
19
4101 BU/VT
20
4100 WH
9
4101 BU/VT
10
Driver Assistance Systems Schematics
3038 BN
5
3037 YE/BN
6
X3
X53A Body Wiring Harness Junction Block - Rear
B+
F50RA 30A
F4RA 15A
X1 36
X2 1
5040 RD/YE
2240 RD/BN
X328
29
5040 RD/YE
4
2240 RD/BN
J310
2240 RD/BN
J311
5040 RD/YE
AL9
AVK
3
B+
X1 6
B+
X1 1
1150 BK
G301

## Driver Seat Schematics (Seat Adjuster Switches (A45 / AUN))

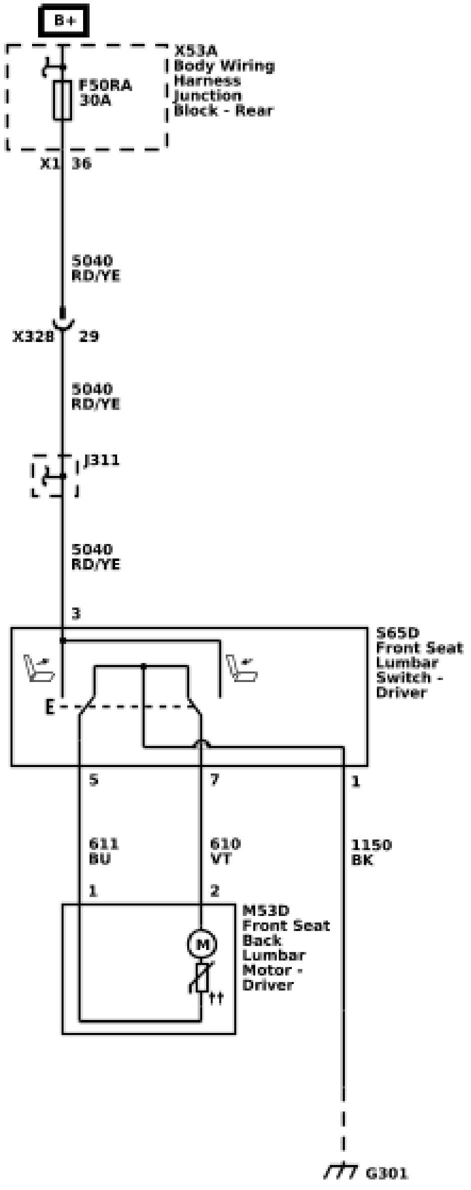

L O C
D E S C
B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F4RA
15A
X2 1
2240
RD/BN
X328 4
2240
RD/BN
J310
2240
RD/BN
Data
Communication
Schematics
3758
GN/GY
402Ω
432Ω
619Ω
931 Ω
1540Ω
3010Ω
8060Ω
1
2
3
4
5
6
S65D
Front Seat
Lumbar
Switch -
Driver
3
4
AVK
AVK
2818
BU/YE
2817
BK/VT
1
3
5
6
S64D
Front Seat
Adjuster
Switch -
Driver
A90
Logic
B+
4
1150
BK
G301

6885730

# Driver Seat Schematics (Seat Lumbar/Bolster (AVK))

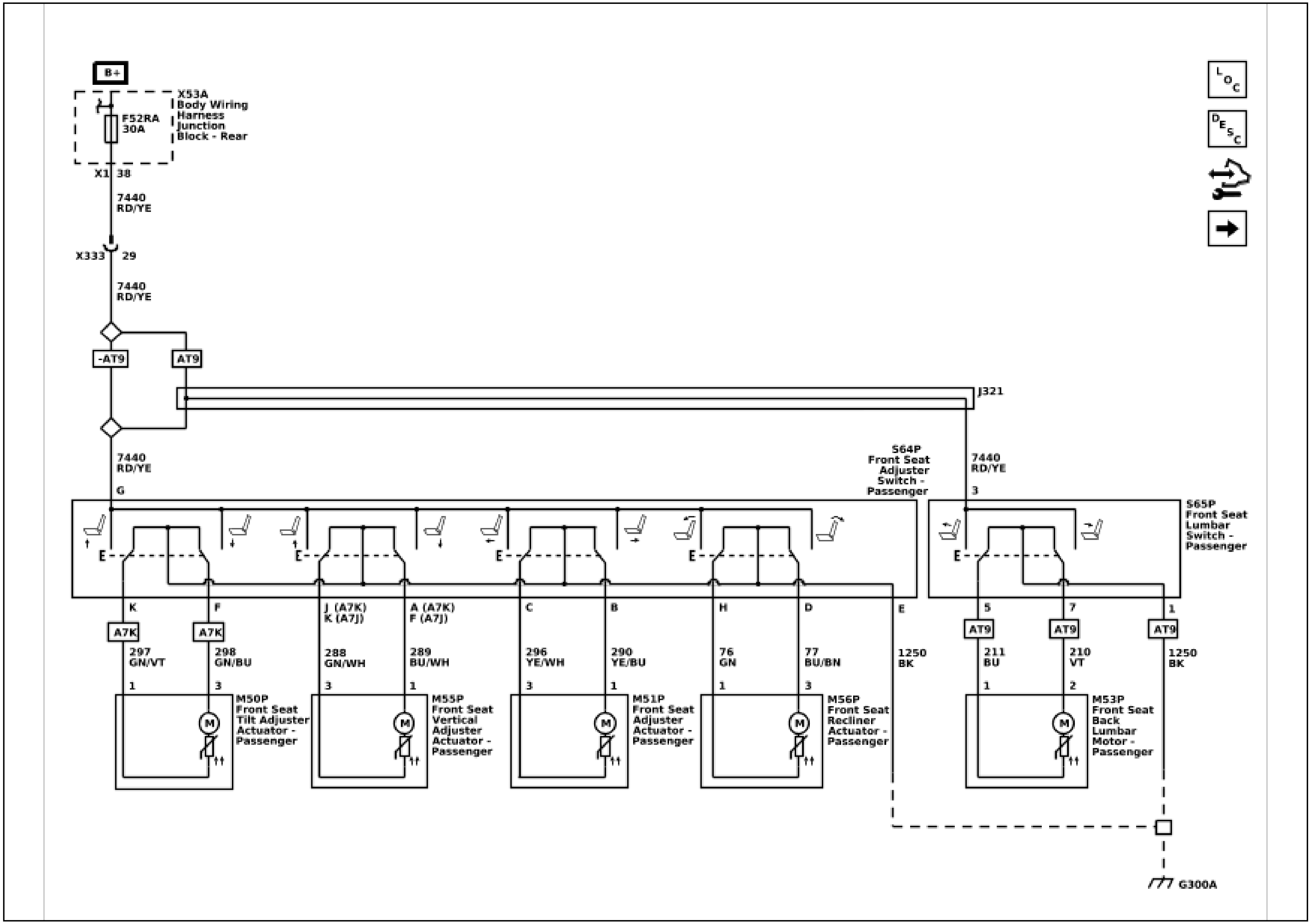

6885731
B+
X53A Body Wiring Harness Junction Block - Rear
F4RA 15A
X2 1
2240 RD/BN
X328 4
2240 RD/BN
J310
2240 RD/BN
1
B+
Data Communication Schematics
3758 GN/GY
2
K104DP Front Seat Bladder Control Module - Driver Primary
3
4891 WH/BU
5
2305 BN/BK
4
1150 BK
G301
1
2
M
G31D Front Seat Back Lumbar Pump - Driver

## Driver Seat Schematics (Seat Lumbar (AL9))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F50RA
30A
X1 36
5040
RD/YE
X328 29
5040
RD/YE
J311
5040
RD/YE
3
S65D
Front Seat
Lumbar
Switch -
Driver
E
5
7
1
611
BU
610
VT
1150
BK
1
2
M53D
Front Seat
Back
Lumbar
Motor -
Driver
M
G301

6885732

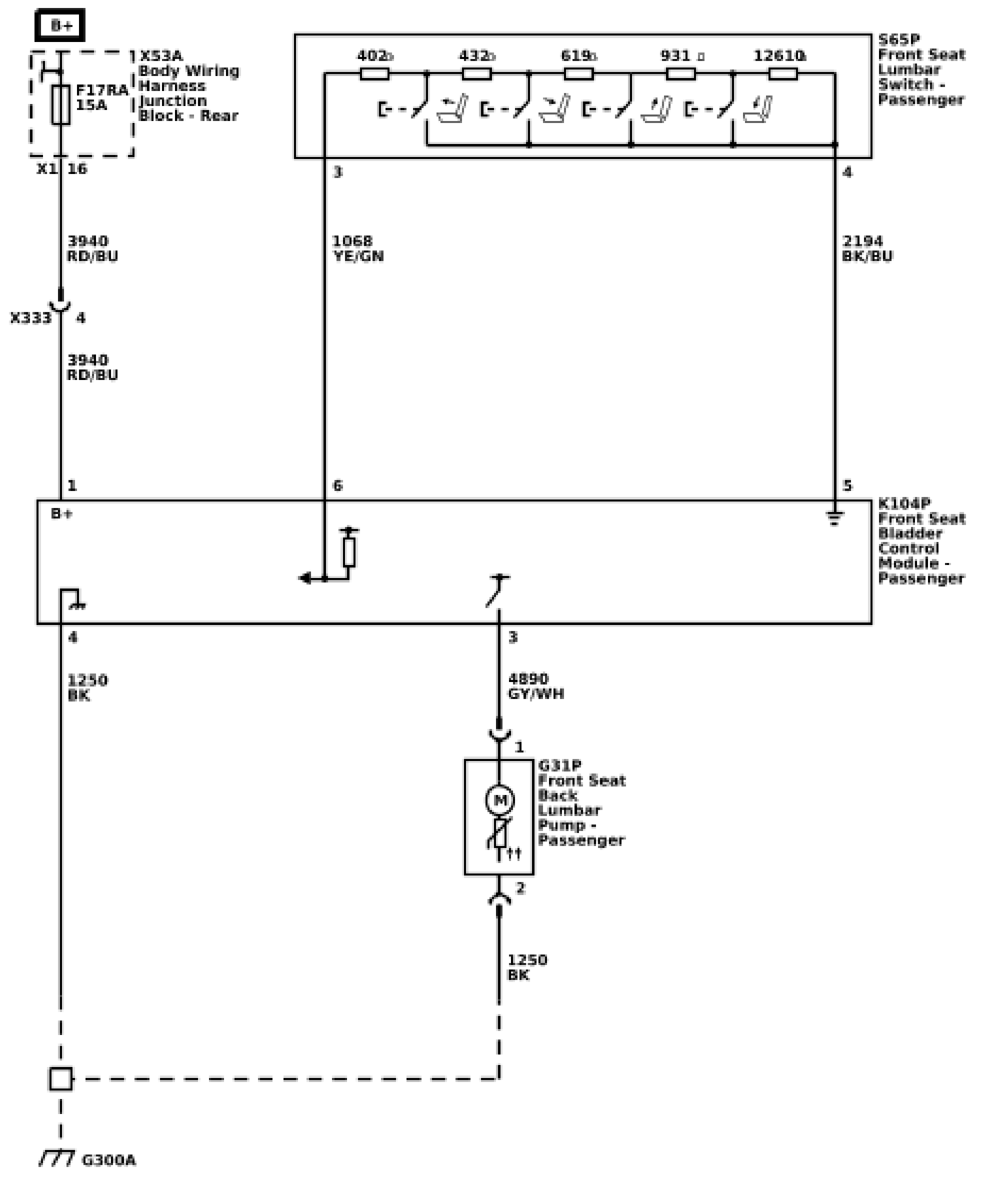
## Passenger Seat Schematics (Power Seat)



LOC
DESC
B+
X53A Body Wiring Harness Junction Block - Rear
F52RA 30A
X1 38
7440 RD/YE
X333 29
7440 RD/YE
-AT9
AT9
J321
7440 RD/YE
G
S64P Front Seat Adjuster Switch - Passenger
7440 RD/YE
3
S65P Front Seat Lumbar Switch - Passenger
E
E
E
E
E
K
F
J (A7K) K (A7J)
A (A7K) F (A7J)
C
B
H
D
E
5
7
1
A7K
A7K
AT9
AT9
AT9
297 GN/VT
298 GN/BU
288 GN/WH
289 BU/WH
296 YE/WH
290 YE/BU
76 GN
77 BU/BN
1250 BK
211 BU
210 VT
1250 BK
1
3
3
1
3
1
1
3
1
2
M
M
M
M
M
M50P Front Seat Tilt Adjuster Actuator - Passenger
M55P Front Seat Vertical Adjuster Actuator - Passenger
M51P Front Seat Adjuster Actuator - Passenger
M56P Front Seat Recliner Actuator - Passenger
M53P Front Seat Back Lumbar Motor - Passenger
G300A

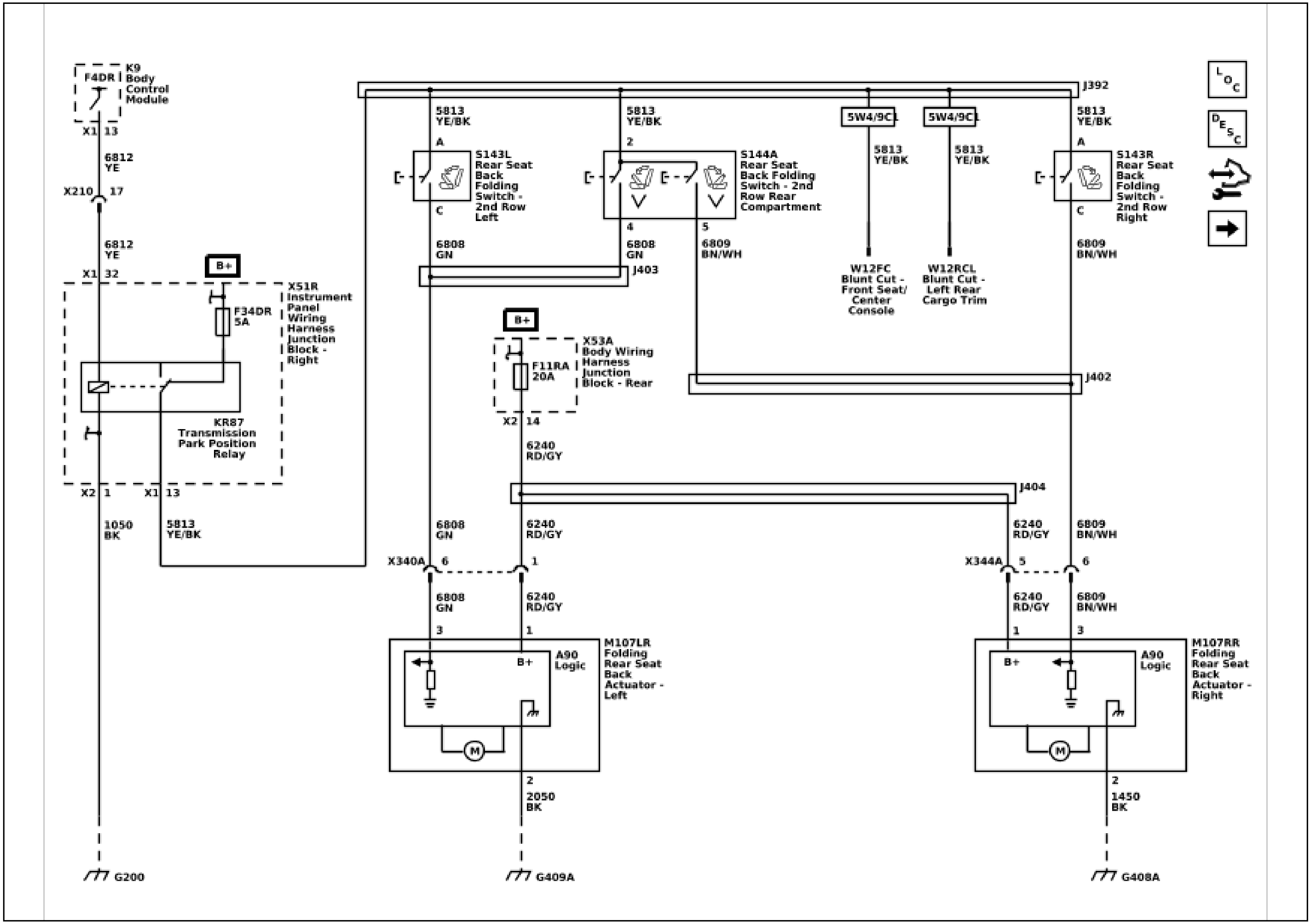
6885733

## Passenger Seat Schematics (Seat Lumbar/Bolster (AVU))

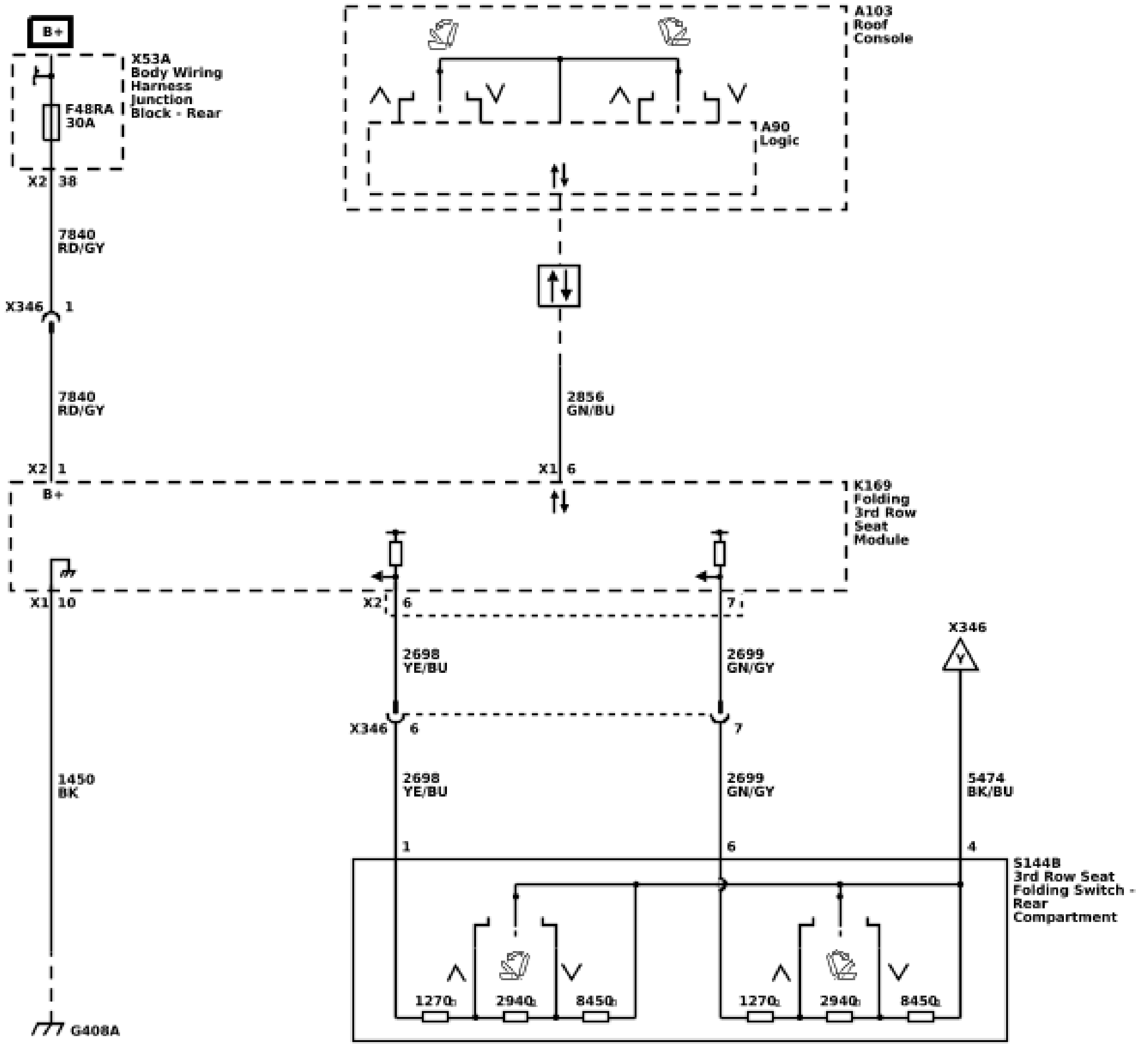

B+
X53A Body Wiring Harness Junction Block - Rear
F17RA 15A
X1 16
3940 RD/BU
X333 4
3940 RD/BU
1
B+
S65P Front Seat Lumbar Switch - Passenger
402Ω
432Ω
619Ω
931Ω
12610Ω
3
4
1068 YE/GN
2194 BK/BU
6
5
K104P Front Seat Bladder Control Module - Passenger
4
1250 BK
3
4890 GY/WH
1
G31P Front Seat Back Lumbar Pump - Passenger
M
2
1250 BK
G300A

6885734

## Rear Seat Schematics (2nd Row Seats (ATN / ATT))

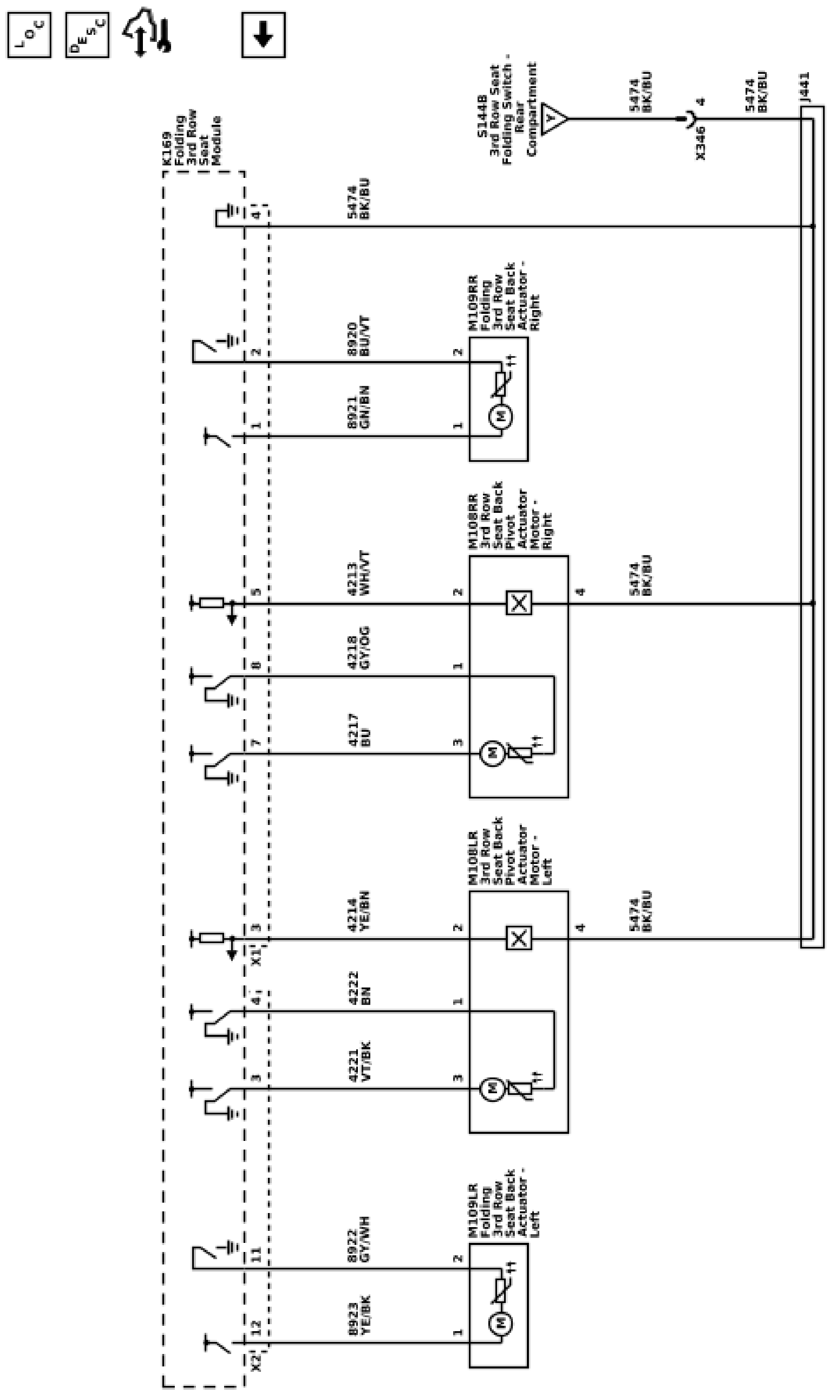

K9 Body Control Module
F4DR
X1 13
6812 YE
X210 17
6812 YE
X1 32
B+
F34DR 5A
X51R Instrument Panel Wiring Harness Junction Block - Right
KR87 Transmission Park Position Relay
X2 1
X1 13
1050 BK
5813 YE/BK
G200
J392
5813 YE/BK
A
S143L Rear Seat Back Folding Switch - 2nd Row Left
C
6808 GN
5813 YE/BK
2
S144A Rear Seat Back Folding Switch - 2nd Row Rear Compartment
4
5
6808 GN
6809 BN/WH
J403
5W4/9C1
5813 YE/BK
W12FC Blunt Cut - Front Seat/ Center Console
5W4/9C1
5813 YE/BK
W12RCL Blunt Cut - Left Rear Cargo Trim
5813 YE/BK
A
S143R Rear Seat Back Folding Switch - 2nd Row Right
C
6809 BN/WH
B+
X53A Body Wiring Harness Junction Block - Rear
F11RA 20A
X2 14
6240 RD/GY
J402
J404
6808 GN
6240 RD/GY
X340A 6
1
6808 GN
6240 RD/GY
3
1
B+
A90 Logic
M
M107LR Folding Rear Seat Back Actuator - Left
2
2050 BK
G409A
6240 RD/GY
6809 BN/WH
X344A 5
6
6240 RD/GY
6809 BN/WH
1
3
B+
A90 Logic
M
M107RR Folding Rear Seat Back Actuator - Right
2
1450 BK
G408A
L O C
D E S C
6885735

## Rear Seat Schematics (3rd Row Folding Seat Control Module Power, Ground, Serial Data, and Controls (AS8))


B+
X53A
Body Wiring
Harness
Junction
Block - Rear
F48RA
30A
X2 38
7840
RD/GY
X346 1
7840
RD/GY
X2 1
B+
X1 10
1450
BK
G408A
A103
Roof
Console
A90
Logic
2856
GN/BU
X1 6
K169
Folding
3rd Row
Seat
Module
X2 6
7
2698
YE/BU
2699
GN/GY
X346 6
7
2698
YE/BU
2699
GN/GY
X346
Y
5474
BK/BU
1
6
4
S144B
3rd Row Seat
Folding Switch -
Rear
Compartment
1270Ω
2940Ω
8450Ω
1270Ω
2940Ω
8450Ω

6885736

## Rear Seat Schematics (3rd Row Folding Seat Motors (AS8))


6885737
K169 Folding 3rd Row Seat Module
M109RR Folding 3rd Row Seat Back Actuator - Right
M108RR 3rd Row Seat Back Pivot Actuator Motor - Right
M108LR 3rd Row Seat Back Pivot Actuator Motor - Left
M109LR Folding 3rd Row Seat Back Actuator - Left
S144B 3rd Row Seat Folding Switch - Rear Compartment
X346
J441
X1
X2
5474 BK/BU
8920 BU/VT
8921 GN/BN
4213 WH/VT
4218 GY/OG
4217 BU
4214 YE/BN
4222 BN
4221 VT/BK
8922 GY/WH
8923 YE/BK
M

# Description and Operation

## Lumbar Support/Massage Description and Operation (4-Way)

### Lumbar Support Components

The driver and front passenger pneumatic lumbar support system each consist of the following components:

- Seat lumbar support switch
- Seat lumbar support control module
- Seat lumbar/bolster pump

### Circuit Description

Battery voltage is supplied at all times to the seat lumbar support control module through a 10 A fuse located in the fuse block. Ground is also supplied at all times to the seat lumbar support control module and the seat lumbar/bolster pump.

The driver seat lumbar support switch is a resistive ladder switch. The seat lumbar support control module supplies the seat lumbar support switch with a signal and low reference circuits. When a lumbar switch is pressed, the signal circuit from the seat lumbar support control module is pulled low through the switch contacts and series of resistors indicating the lumbar support request. In response to this request, the seat lumbar support control module energizes its internal inflate solenoid and applies battery voltage through the lumbar support pump control circuit to the pump. The pump runs to inflate the appropriate support bladder until the switch is released.

### Description of Operation

The following describes the lumbar support operation and how the seat lumbar support control module responds to each of the lumbar support switch inputs:

- When the lumbar support switch pressed in the FORWARD direction, the seat lumbar support control module will command the lumbar support pump ON and the upper and lower lumbar support bladders should inflate until the bladders are 100% inflated or the switch is released.
- When pressing the lumbar support switch in the REARWARD direction, the seat lumbar support control module will slowly deflate the upper and lower lumbar support bladders until the switch is released or both bladders are 100% deflated.
- When the lumbar support switch is pressed in the UP direction, the seat lumbar support control module will slowly inflate the upper lumbar support bladder until the switch is released or the bladder is 100% inflated.
- When the lumbar support switch is pressed in the DOWN direction, the seat lumbar support control module will slowly deflate the upper lumbar bladder while it inflates the lower lumbar bladder. The seat lumbar support control module will continue this operation until the switch is released or the upper lumbar bladder is 100% deflated and the lower lumbar bladder is 100% inflated.

## Lumbar Support/Massage Description and Operation (2-Way)

### Lumbar Support Components

The power seat lumbar support systems consist of the following components:

- S65 Front Seat Lumbar Switch
- M53 Front Seat Back Lumbar Motor

The seat lumbar switch provides both power and ground to the lumbar support motor. The motor contains an electronic circuit breaker (PTC) that will reset only after voltage has been removed from the motor. The motor moves the lumbar support forward and rearward.

When the lumbar switch is operated to move the lumbar support rearward, battery positive voltage is applied through the lumbar rearward switch contacts and the lumbar motor rearward control circuit to the lumbar support motor. The motor is grounded through the lumbar forward switch contacts and the lumbar motor forward control circuit to the motor. The motor runs to drive the lumbar support rearward away from the occupant's back until the switch is released. Moving the lumbar support forward works similarly to moving the lumbar support rearward, except that battery positive voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction.

## Lumbar Support/Massage Description and Operation (With Seat Bolster Memory Control Module)

The memory lumbar/bolster/massage system uses air bladders to adjust various aspects of the seat configuration to meet an occupant’s preference. It also allows these adjustments/types/intensities to be stored to a memory position along with the stored seat position.

Some vehicles may also be equipped with dynamic mode control which gives the chassis subsystem the ability to request an automatic adjustment to the seat's bolster support depending on vehicle driving conditions.

The various seat adjustments and functionality which may be possible include:

- Lumbar support – forward and rearward
- Lumbar support – up and down

- Seat back side bolster – in and out
- Back massage – type(s) and intensity (intensities)
- Cushion side bolster – in and out

The components of the system include:

- LIN based seat switch
- Seat adjuster memory module
- Bolster memory control module
- Seat air pump motor
- Air bladders
- Information display (If applicable)

### LIN Seat Switch

The seat switch communicates all customer requests for seat movement or adjustment via the LIN serial data bus to the seat adjuster memory module. The seat switch may consist of the following controls:

- Seat adjuster switch similar to the typical discrete seat switch
- Massage On/Off switch, if massage is equipped
- 4-way lumbar switch which can be activated Up/Down/Forward/Rearward
- 2-way bolster switch which can be activated Up/Down

### Lumbar/Bolster Operation

**Note:** When the Ignition Off, it is normal operation for bladders to deflate.

Once the lumbar/bolster feature has been activated, the seat adjuster memory module will command the seat bolster memory control module to perform the required pneumatic movements via LIN serial data messages.

The seat bolster memory control module contains the electronic circuitry for executing the commanded pneumatic seat adjustments, air direction solenoids, pressure sensors for storing air bladder pressures, and an output which supplies battery power to the external seat air pump motor when any of the air bladders require inflating.

Based on the LIN command from the seat adjuster memory module, the seat bolster memory control module controls the appropriate air solenoids and activates or deactivates the external air pump in order to inflate or deflate the air bladders in the correct combination. When an air bladder needs inflating its solenoid opens and the pump motor is activated pumping air into the bladder. When an air bladder needs deflating its solenoid opens the release valve and air is allowed to bleed out of the bladder into the vehicle cabin.

To support memory recall and massage, the seat bolster memory control module uses internal air pressure sensors to track, store and recall the positions of all the air bladders under its control.

The massage On/Off switch on the LIN seat switch allows the customer to turn the massage feature on and off.

### Memory Seats Description and Operation

The memory seat system consists of the following components:

- Driver seat adjuster switch
- Driver seat memory switch
- Seat memory control module
- Driver seat horizontal motor
- Driver seat front vertical motor
- Driver seat rear vertical motor
- Driver seat recline motor

### Driver Seat Adjuster Switch

Ground is supplied at all times to the seat adjuster switch. Battery positive voltage is supplied at all times to the seat adjuster switch through a 10 A fuse located in the fuse block. When the seat adjuster switches are pressed, the appropriate signal message is sent to the seat memory control module, via a LIN message. The seat memory control module then commands the appropriate seat motor to move in response to the switch signal message.

### Seat Memory Control Module Power and Grounds

Battery positive voltage is supplied at all times to the seat memory control module through a 30 A fuse located in the fuse block. This voltage is used by the module to apply power to the seat motor when commanded ON. Battery positive voltage is also applied at all times to the seat memory control module through a 10 A fuse located in the fuse block.
This voltage is used to power up the module. Ground is provided to the seat memory control module through the module ground circuit and ground connection.

### Seat Motors

There are 4 motors that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. The recline motor moves the angle of the seat back forward or rearward.

The seat memory control module controls all seat motors via half bridges that are connected to a single power rail internal to the module. The module connects each of the seat motor outputs together when a seat motor is not in operation. The seat memory control module continually checks the motor control circuits for shorts to ground or voltage. If a fault is detected with a motor control circuit movement of the related motor is inhibited. All of the motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat motors are reversible. For example, when a seat switch is pressed to move the entire seat forward, a signal is sent from the seat adjuster switch to the seat memory control module, via the LIN message. In response to this signal, the module applies battery voltage through the seat horizontal motor forward control circuit and ground through the seat horizontal motor rearward control circuit to the motor. The motor runs to drive the entire seat forward until the switch is released, the motor reaches the end of travel, or an obstruction prevents further seat movement. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the motors are powered this way.

### Position Detection

**Note:** There are no physical position sensors used to detect the seat position and movement.

To monitor the seat position, the seat memory control module counts the electrical pulses of each seat motor. During seat motor operation, the electrical pulses are counted and the direction of the seat movement is monitored to determine the seat position.

The seat memory control module determines seat position by keeping a running counter where movement in the forward/upward direction adds counts and movement in the rearward/down direction subtracts counts.

The value of these counters, which represent seat positions, are stored in memory for future seat memory recall operation. During a memory seat position recall, the seat memory control module moves the seat in such a way to return it the stored counter value.

### Memory Functions

**Note:** The seat memory control module does not store the mirror, column, MBM, or HUD positions. The seat memory control sends a serial data messages to the respective modules to recall their locally stored memory position.

In all power modes except crank, memory recalls can be initiated by pressing and holding one of the memory position buttons until the seat reaches the stored memory position associated with the activated button. This is called a supervised recall.

The driver seat memory switch is supplied ground at all times. The seat memory control module supplies set and memory recall signal circuits to the seat memory switch. When a memory recall switch is pressed, the signal circuit from the seat memory control module is pulled low through the switch contacts and a series of resistors indicating the memory recall request. In response to this signal, the seat memory control module commands the appropriate seat motors to move to the pre-recorded seat positions stored in memory.

Refer to the Owner’s Manual for storing memory positions.

### Seat Entry Memory Recall and Seat Exit Memory Recall

The seat memory control module will not perform Seat Entry Memory Recall and Seat Exit Memory Recall functions unless these options are enabled in vehicle personalization using the radio/HVAC controls.

Refer to Instruments and Controls/Vehicle Personalization in the Owner’s Manual for the following memory personalization options:

- Seat Entry Memory Recall
- Seat Exit Memory Recall

The radio/HVAC controls reports the seat memory recall option settings to the seat memory control module via serial data message. The module will then store the memory recall option setting and examine it before making a memory seat adjustment. The seat memory recall option setting stored within the module will not change until the seat memory recall option setting in vehicle personalization is changed.

### Memory Store and Recall Conditions

**Note:** Memory function requires a position be saved to the activated memory switch that is being recalled.

**Memory Store Preconditions:**

- RUN power mode
- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear

- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2

**Memory Recall Preconditions:**

- No Stuck or Active Switches (seat, mirror, column, HUD)
- No SIR Disable
- No Load Shed 3
- No output motor drive faults detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- Memory ID is 1 or 2
- LIN communications Active
- Not currently performing a memory store
- A position has been saved to the recalled memory position

**Memory Recall Termination Conditions:**

- Precondition no longer met
- Active memory button changed
- Recall completed
- Exceed the max allowed recall time (30 seconds)
- OTA Programming Requested

**Auto Memory Recall Preconditions:**

**Note:** Auto Memory Recall is suspended during Start power mode.

- Valid Memory ID and Driver ID
- Valid Power Mode
- No Active or Stuck Switches
- No SIR disable
- Vehicle is Stopped
- No Load Shed 3
- No ASIL – A output fault detected
- No position plausibility faults detected
- No child lockout – rear
- Not limit switch fault
- No memory switch fault
- A position has been saved to the recalled memory position
- Enabled for Current Driver

**Auto Memory Recall Termination Conditions:**

- Precondition no longer met, except being Parked
- Exceed any recall completion times
- Vehicle On terminates Seat Exit Memory
- Vehicle Off terminates Seat Entry Memory
- OTA Programming Requested

**Memory Recall Termination Data Displays:**

The termination causes can be viewed through the Seat Memory Recall History data displays. The following are possible memory recall termination causes:

- No Recall Requested
- Seat Entry/Exit Recall Completed
- Memory Button 1 Recall Initiated
- Memory Button 1 Recall Completed
- Memory Button 2 Recall Initiated
- Memory Button 2 Recall Completed
- Memory Button Exit Recall Initiated
- Memory Button Exit Recall Completed
- Terminated by Other then following
- Memory switch stuck or Invalid
- Memory Switch (Not including SET) out of Range
- Memory SET switch Active or 1, 2, Exit switch changed
- Seat Switch Active or Stuck
- Mirror Switch Active or Stuck
- HUD Switch Active or Stuck
- No Position 1 stored
- No Position 2 Stored
- No Position Exit Stored
- Load Shed 3
- Sir Disabled
- Limit Switch Active or Fault
- Seat Entry – Not Parked terminated
- Invalid Power Mode
- Seat Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Control Fault
- Seat Rear Up/Down Motor Control Fault
- Recline Forward Rearward Motor Control Fault
- Seat Front Up/Down Motor Position Fault
- Seat Rear Up/Down Motor Position Fault
- Recline Forward Rearward Motor Position Fault

## Power Seats System Description and Operation (Driver or Passenger without Seat Adjuster Memory Module)

The driver and passenger power seat systems each consist of the following components:

- Seat adjuster switch
- Seat horizontal motor
- Seat front vertical motor (If Equipped)
- Seat rear vertical motor
- Seat recline motor

### Seat Motors

The seat switches provide both power and ground to the selected seat motors.

All of the seat motors operate independently of each other. Each motor contains an electronic circuit breaker (PTC) that opens in the event of a circuit overload and will reset only after voltage has been removed from the circuit. There are four seat position motors and two lumbar motors. These are the horizontal motor, front vertical motor, rear vertical motor, and the seat back recline motor. The seat horizontal motor moves the entire seat forward and rearward. The seat vertical motors may operate independently to tilt the front or rear of the seat cushion up or down. Both motors can also run simultaneously to move the entire seat up or down. The recline motor moves the angle of the seat back forward or rearward.

### Seat Operation

All seat motors are reversible. For example, when the seat horizontal forward switch is pressed to move the entire seat forward, battery voltage is applied through the switch contacts and the seat horizontal motor forward control circuit to the motor. With the horizontal motor rearward switch contacts closed to the switch ground circuit, the motor runs in order to drive the entire seat forward until the switch is released. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on opposite circuits causing the motor to run in the opposite direction. All seat motors are powered this way.

## Power Seats System Description and Operation (Driver w/ Seat Adjuster Memory Module)

The passenger power seat actuators controlled by a Seat Adjuster Memory Module consists of the following components:

- Seat adjuster switch
- Seat adjuster memory module
- Seat horizontal motor
- Seat front vertical motor
- Seat rear vertical motor
- Seat recline motor

### Front Seat Adjuster Switch

Ground is supplied at all times to the Front Seat Adjuster Switch. Battery positive voltage is supplied at all times to the Front Seat Adjuster Switch through a 10 A fuse located in the fuse block. When the Front Seat Adjuster Switches are pressed, the appropriate signal message is sent to the Seat Adjuster Memory Module, via a LIN message. The Seat Adjuster Memory Module then commands the appropriate seat motor to move in response to the switch signal message.

### Seat Adjuster Memory Module Power and Grounds

Battery positive voltage is supplied at all times to the Seat Adjuster Memory Module through a 30 A fuse located in the fuse block. This voltage is used by the module to apply power to the seat motor when commanded ON. Battery positive voltage is also applied at all times to the Seat Adjuster Memory Module through a 10 A fuse located in the fuse block. This voltage is used to power up the module. Ground is provided to the Seat Adjuster Memory Module through the module ground circuit and ground connection.

### Seat Actuators

There are 4 actuators that move the position of the seat. These are the seat horizontal motor, seat front vertical motor, seat rear vertical motor, and the seat back recline motor. The horizontal motor moves the entire seat forward and rearward. The seat front vertical motor moves the front of the seat cushion up or down. The seat rear vertical motor moves the rear of the seat cushion up and down. The recline motor moves the angle of the seat back forward or rearward.

The Seat Adjuster Memory Module controls all seat actuators via half bridges that are connected to a single power rail internal to the module. The module connects each of the seat motor outputs together when a seat motor is not in operation. The Seat Adjuster Memory Module continually checks the motor control circuits for shorts to ground or voltage. If a fault is detected with a motor control circuit movement of the related motor is inhibited. All of the actuators operate independently of each other. Each motor contains an electronic circuit breaker (PTC), which will reset only after voltage has been removed from the motor.

All seat actuators are reversible. For example, when a seat switch is pressed to move the entire seat forward, a signal is sent from the Front Seat Adjuster Switch to the Seat Adjuster Memory Module, via the LIN message. In response to this signal, the module applies battery voltage through the seat horizontal motor forward control circuit and ground through the seat horizontal motor rearward control circuit to the motor. The motor runs in order to drive the entire seat forward. Moving the entire seat rearward works similarly to moving the entire seat forward, except that battery voltage and ground are applied on the opposite circuits causing the motor to run in the opposite direction. All of the actuators are powered this way.

## Power Seats System Description and Operation (3rd Row)

The left and right 3rd row folding seat system each consist of the following components:

- Folding seat control module – 3rd row
- Folding seat switch – D-pillar 3rd row
- Folding seat switch – Overhead console 3rd row
- Folding seat motor – seat back release 3rd row
- Folding seat motor – 3rd row
- Folding seat sensor

## Folding Seat Control Module – 3rd Row

The folding seat control module controls both sides of the 60/40 split 3rd row folding seat.

The folding seat control module will be in a low power sleep state until it detects the activation of one of the folding seat switches. It will remain in its normal operating awake mode and not return to its sleep mode until all its outputs have been off for 30 s and it has been determined that no switches are active.

Battery positive voltage is supplied at all times to the folding seat control module through a 30 A fuse located in the rear body fuse block. The module uses this voltage for both logic power and to power the seat motors and seat back release motors. Each folding seat motor and release motor is controlled by a relays internal to the folding seat control module and through two control circuits to each motor and release motor. The control module checks to see if the control circuits are shorted to ground or voltage before enabling folding seat operation.

## D-Pillar Folding Seat Switches

The 3rd row folding seat switches are located on the D-pillar of the rear cargo area. Each side of the 60/40 split seat has a pair of fold and unfold normally open, high assertion, momentary switches designed to keep them from being simultaneously pressed.

When the transmission is in the park position, battery voltage is supplied to the folding seat switches through the normally closed contacts of the Park Enable Relay which is controlled by the BCM. When the transmission is not in the park position, the BCM energizes the relay opening the contacts and removing battery voltage from the switches. Thus folding seat operation is only available with the vehicle transmission in the park position.

Each switch contact is connected to an individual discrete input of the folding seat control module which provides a pull down to ground on these signal circuits. When a folding seat switch is pressed battery voltage is applied through the switch contacts and the signal circuit to the folding seat control module. The module then commands the folding seat to move in response to the switch signal.

## Overhead Console Folding Seat Switches

The overhead console has two switches that are used to fold the 3rd row seat. The left switch operates the left portion of the seat and the right switch operates the right portion of the seat. When the left LED is illuminated it means that the 3rd row power folding seat module sees one of the unlatch switches as active and the left seatback in the 3rd row is not fully in the unfolded seated position. When the right LED is illuminated it means that the 3rd row power folding seat module sees one of the latch/unlatch switches is active and the right seatback in the 3rd row is not fully in the unfolded seated position.

When the transmission is in the park position, battery voltage is supplied to the folding seat switches through the normally closed contacts of the Park Enable Relay which is controlled by the BCM. When the transmission is not in the park position, the BCM energizes the relay opening the contacts and removing battery voltage from the switches. Thus folding seat operation is only available with the vehicle transmission in the park position.

Each switch contact is connected to an individual discrete input of the folding seat control module which provides a pull down to ground on these signal circuits. When a folding seat switch is pressed battery voltage is applied through the switch contacts and the signal circuit to the folding seat control module. The module then commands the folding seat to move in response to the switch signal.

### Folding Seat Motor – Seat Back Release

The folding seat back release motor is a spring loaded device used to latch the seat back into its desired parked position or to unlatch the seat back for folding or unfolding seat operation. There are three modes of release motor control; retract, hold, and release. When the folding seat switch is pressed to fold the seat, the folding seat control module applies a PWM voltage, approximately 95% duty cycle, through the seat back release motor control circuit to the motor releasing the seat back. The control module holds the release motor at a reduced voltage, approximately 25% duty cycle, until a stall condition is reached. Once a stall condition is reach the module releases the motor latching the seat back in place. One second after the motor is released, the seat will move in the opposite direction of travel to confirm the seat back is locked in a secure position. This action will continue until a stall condition is detected, refer to Folding Seat Sensor below. After the completion of the latch lock conformation, the module will relieve any bound up tension after the latch lock conformation.

### Folding Seat Motor

The folding seat motor is used to physically move the seat back to its desired position. It is a bi-directional motor connected to two H-Bridge relay outputs of the folding seat control module. To fold the seat, one control module output provides power to one side of the motor while the other side is grounded through the other relay output. To unfold the seat, the polarities on the motor are reversed.

While the motor outputs are off, the control module internal diagnostic network applies a bias voltage of 2.5 V to the motor control circuits. If there is a short to voltage or a short to ground on either control circuit, this will cause a shift in the bias voltage on the diagnostic network and the module will not activate a motor under this condition.

### Folding Seat Sensor

Internal to the folding seat motor is the folding seat sensor. The sensor is a 2-wire hall-effect sensor which is used strictly to determine the stall status of the folding seat motor. It is not used to provide seat position information.

The folding seat control module supplies a 10 V reference voltage through one circuit while the other circuit is the signal circuit. As the motor runs the sensor provides 4 pulses per revolution which it uses to determine when the motor has reached a stalled condition. A stall condition is caused by the seat back being fully folded, by being unfolded in the upright position, or by an object in the seat’s path preventing movement. If the module does not detect a pulse from the sensor for 100 ms it will cease the folding seat operation.

### Folding Seat Operation

With the vehicle transmission in the park position, the folding seat will operate in either dual mode or single mode. The normal operating mode is the dual seat mode where both sides of the 60/40 seat can move individually or at the same time.

Single seat mode is entered during a requested operation when the system voltage drops below 10.5 V. It allows only one side of the 60/40 seat to be folded at a time until the requested operation is complete. Once the operation is completed, additional switch inputs will be ignored until the voltage level returns to its normal range. In all cases the 60 seat operation will have priority over the 40 seat operation.

When a switch is activated, battery voltage is applied to the associated input signal to the control module. This wakes the module up out of its low power state and begins to execute the requested seat movement.

First, the control module operates the folding seat back release motor in the pull state, refer to Folding Seat Motor – Seat Back Release above, until it considers the seat is unlatched as determined either monitoring motor current for a stall condition or a 1.5 s time-out. Once the seat is considered unlatched the control module maintains the release motor in the hold state to keep the latch pin disengaged from the seat.

Once the release motor is in the hold state, the control module powers the folding seat motor in the appropriate direction to fold or un-fold the seat based on which switch inputs are active. While the seat motor is active the control module monitors the folding seat sensor for a stall condition, switch inputs for a transition from the active to the inactive state, excessive motor current, and the time the motor is active.

The seat will continue to move until the control module determines that either the customer has released the switch, the folding seat sensor indicates that the folding seat motor is in a stall condition, excessive motor current is detected, or the current seat movement is taking an excessive amount of time to execute for the given system voltage and operating temperature. When any of these conditions are detected the control module turns off the seat motor, then releases the motor allowing the motor’s spring to drive the latch pin back into the lock position. The control module then executes a seat parking operation.

To execute seat parking, one second after the release motor is released, the seat shall move in the opposite direction of travel to confirm the latch is locked. This seat movement will occur until a stall condition is detected or 400 ms have passed. Then to relieve any tension in the seat structure that may have occurred due to the latch confirmation, the seat will move in the opposite direction for a specified amount of travel or after 100 ms have passed.

The module will power down to its low power state when all the switches appear inactive and all the outputs have been inactive for 30 s.

### Power Seats System Description and Operation (2nd Row)

The left and right 2nd row folding seat systems each consist of the following components:

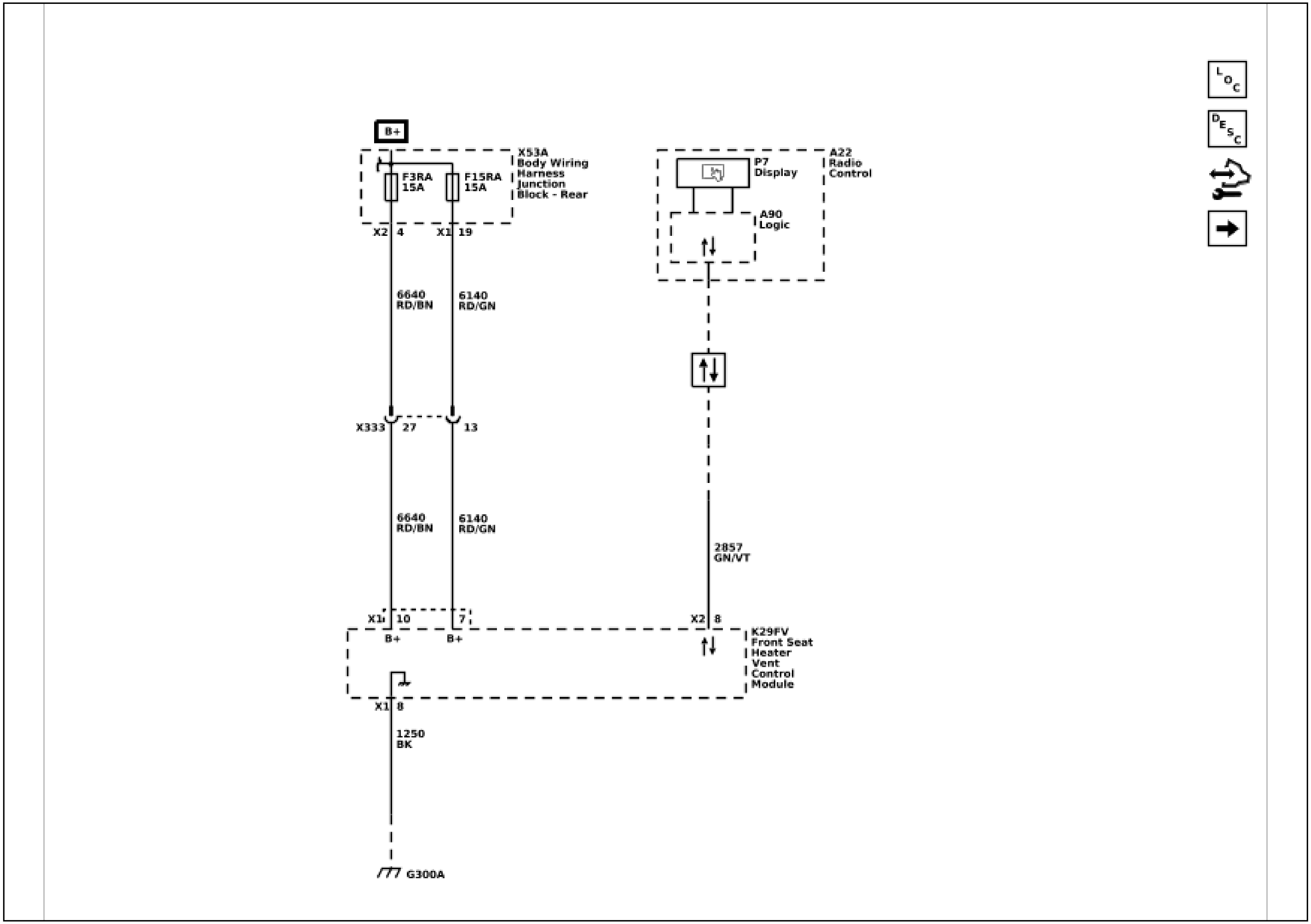
- Folding seat switch
- Folding seat motor

The folding 2nd row seats are operated from the folding seat switches located on the passenger side rear panel and on the trim panel in the rear cargo area. Battery voltage is supplied at all times to the folding seat switches through the park enable relay while in a de-energized state. Battery voltage is also supplied at all times to the folding seat motors through a 20 A fuse located in the rear body fuse block. When a folding seat switch is pressed, battery voltage is applied through the switch contacts and the control circuit to the folding seat motor. The motor runs to move the seat back to the folded position.

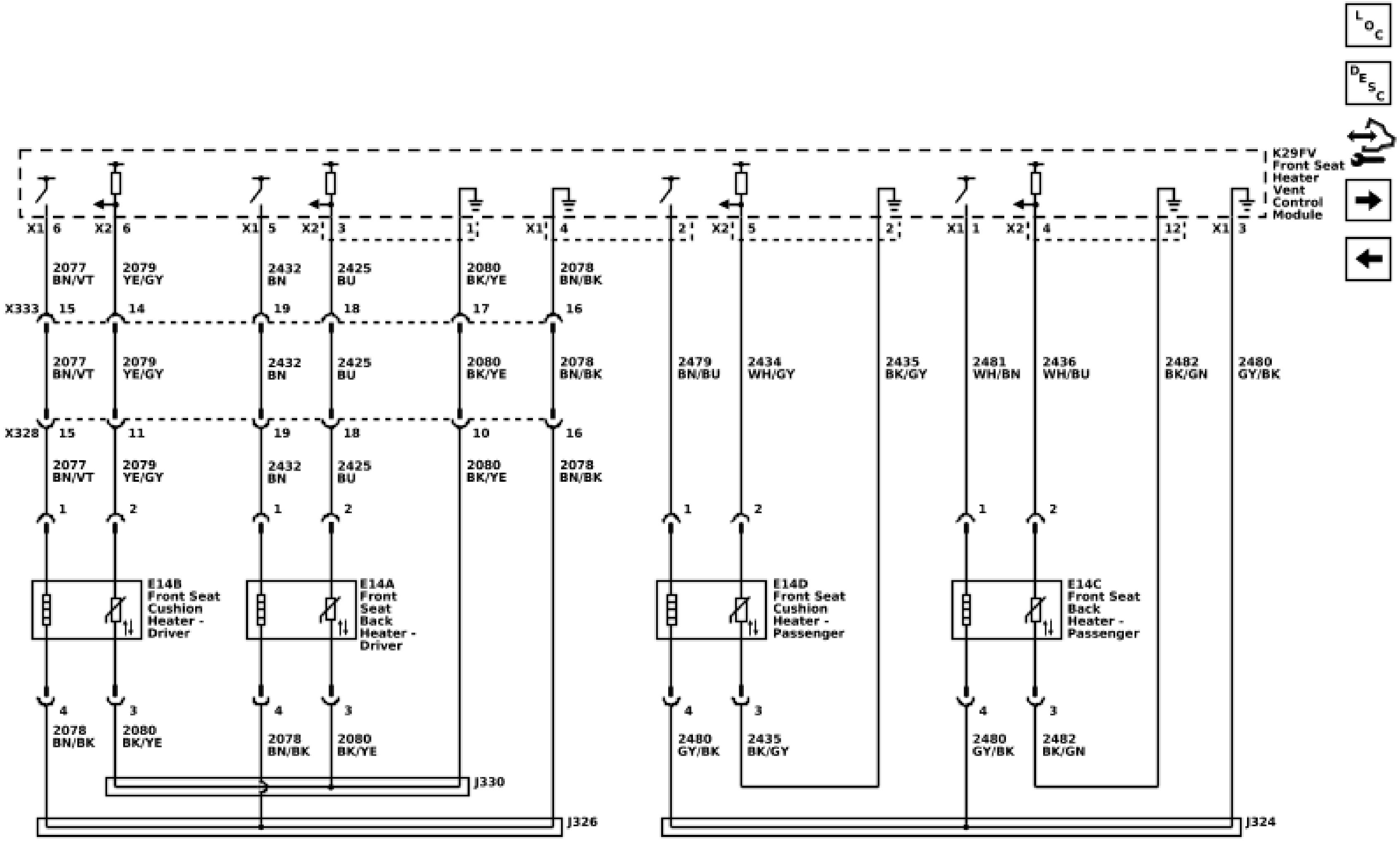
# Seat Heating and Cooling

## Schematic and Routing Diagrams

## Heated/Cooled Seat Schematics (Front Seat Heating Control Module Power, Ground, Serial Data, and Controls (KA1 / KQV))

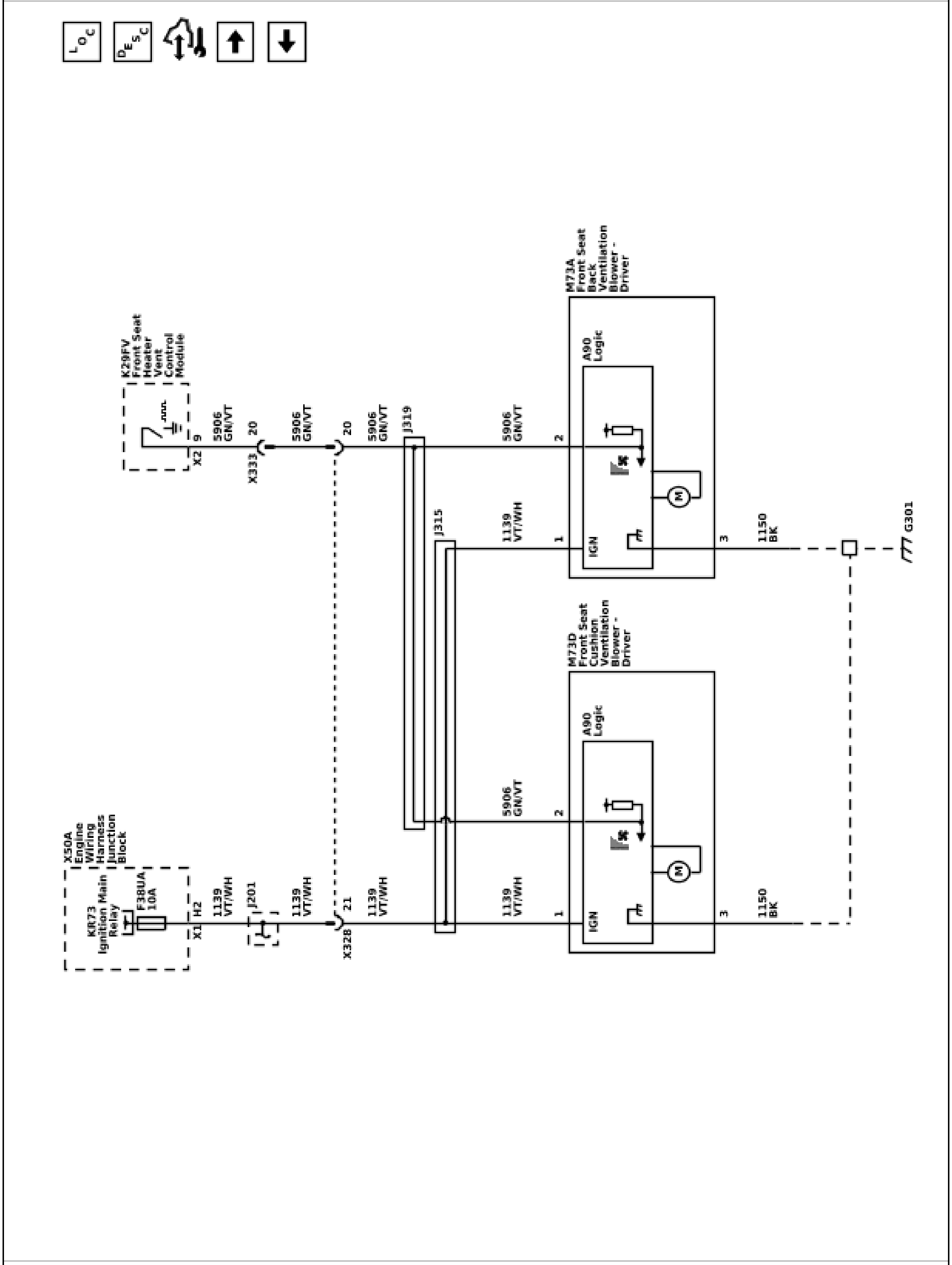

B+
X53A Body Wiring Harness Junction Block - Rear
F3RA 15A
F15RA 15A
X2 4
X1 19
6640 RD/BN
6140 RD/GN
X333 27
13
6640 RD/BN
6140 RD/GN
X1 10
7
B+
B+
A22 Radio Control
P7 Display
A90 Logic
2857 GN/VT
X2 8
K29FV Front Seat Heater Vent Control Module
X1 8
1250 BK
G300A
6885738

## Heated/Cooled Seat Schematics (Heated Seat Elements - Front (KA1 / KQV))


K29FV Front Seat Heater Vent Control Module
X1 6
X2 6
X1 5
X2 3
1
X1 4
2
X2 5
2
X1 1
X2 4
12
X1 3
2077 BN/VT
2079 YE/GY
2432 BN
2425 BU
2080 BK/YE
2078 BN/BK
X333
15
14
19
18
17
16
2077 BN/VT
2079 YE/GY
2432 BN
2425 BU
2080 BK/YE
2078 BN/BK
2479 BN/BU
2434 WH/GY
2435 BK/GY
2481 WH/BN
2436 WH/BU
2482 BK/GN
2480 GY/BK
X328
15
11
19
18
10
16
2077 BN/VT
2079 YE/GY
2432 BN
2425 BU
2080 BK/YE
2078 BN/BK
1
2
1
2
1
2
1
2
E14B Front Seat Cushion Heater - Driver
E14A Front Seat Back Heater - Driver
E14D Front Seat Cushion Heater - Passenger
E14C Front Seat Back Heater - Passenger
4
3
4
3
4
3
4
3
2078 BN/BK
2080 BK/YE
2078 BN/BK
2080 BK/YE
2480 GY/BK
2435 BK/GY
2480 GY/BK
2482 BK/GN
J330
J326
J324

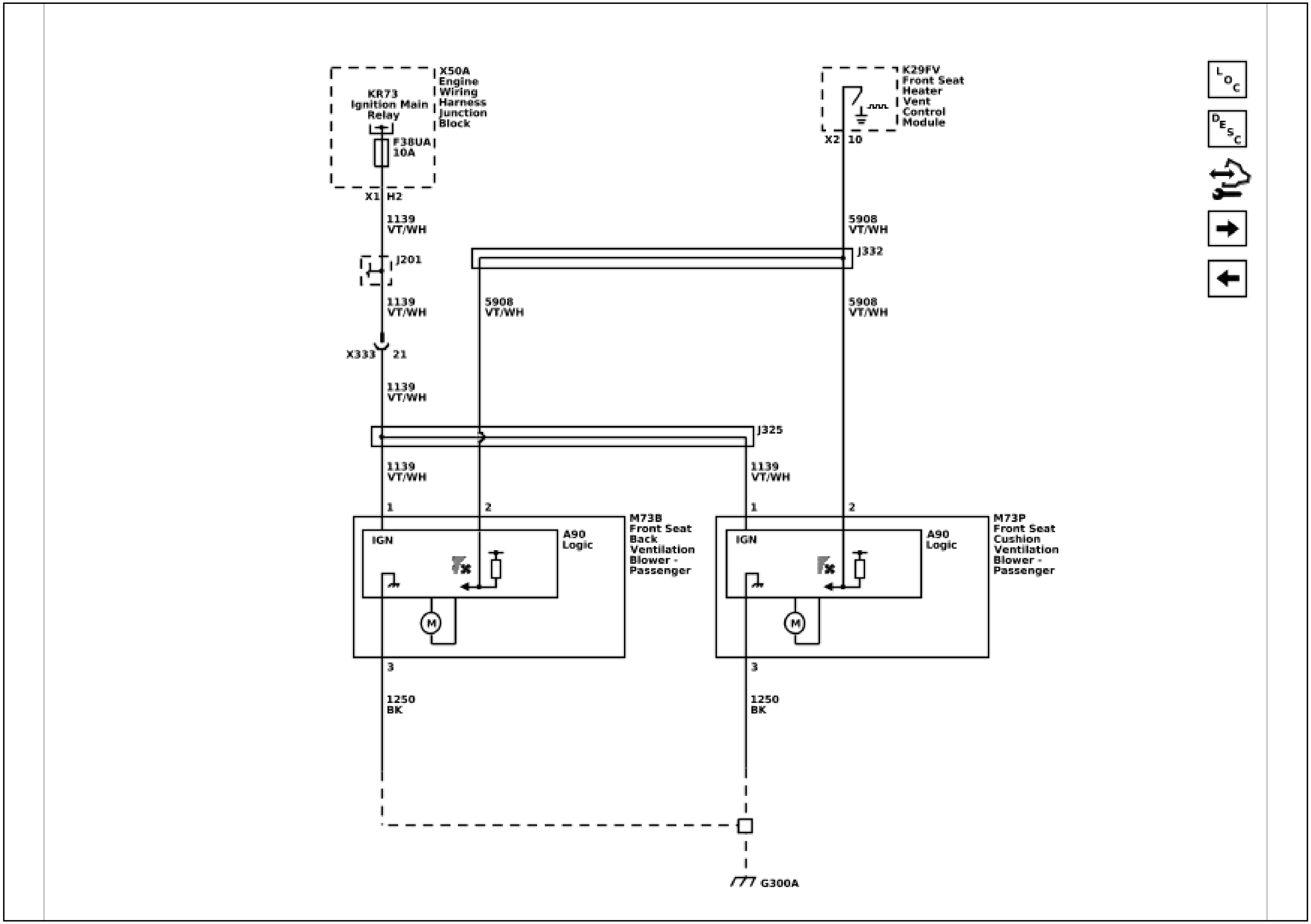
6885739

# Heated/Cooled Seat Schematics (Vented Driver Seat (KQV))


LOC
DESC
K29FV Front Seat Heater Vent Control Module
X2 9
5906 GN/VT
X333 20
5906 GN/VT
20
5906 GN/VT
J319
5906 GN/VT
2
M73A Front Seat Back Ventilation Blower - Driver
A90 Logic
J315
1139 VT/WH
1
IGN
M
3
1150 BK
G301
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F38UA 10A
X1 H2
1139 VT/WH
J201
1139 VT/WH
X328 21
1139 VT/WH
1139 VT/WH
1
5906 GN/VT
2
M73D Front Seat Cushion Ventilation Blower - Driver
A90 Logic
IGN
M
3
1150 BK

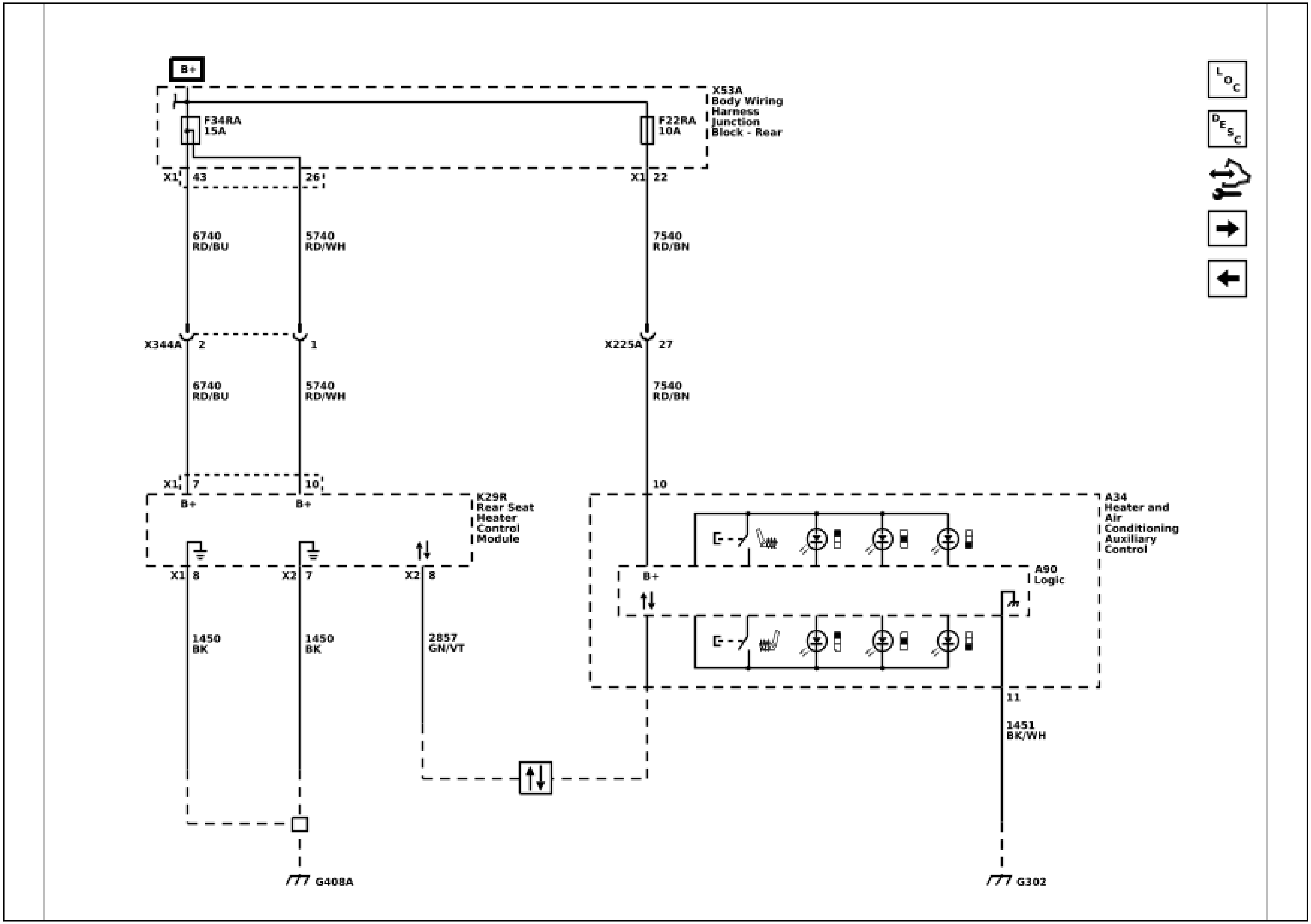
6885740

## Heated/Cooled Seat Schematics (Vented Passenger Seat (KQV))


X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F38UA 10A
X1 H2
1139 VT/WH
J201
1139 VT/WH
X333 21
1139 VT/WH
J325
1139 VT/WH
K29FV Front Seat Heater Vent Control Module
X2 10
5908 VT/WH
J332
5908 VT/WH
5908 VT/WH
1
2
IGN
A90 Logic
M
M73B Front Seat Back Ventilation Blower - Passenger
1139 VT/WH
1
2
IGN
A90 Logic
M
M73P Front Seat Cushion Ventilation Blower - Passenger
3
1250 BK
3
1250 BK
G300A
LOC
DESC

6885741

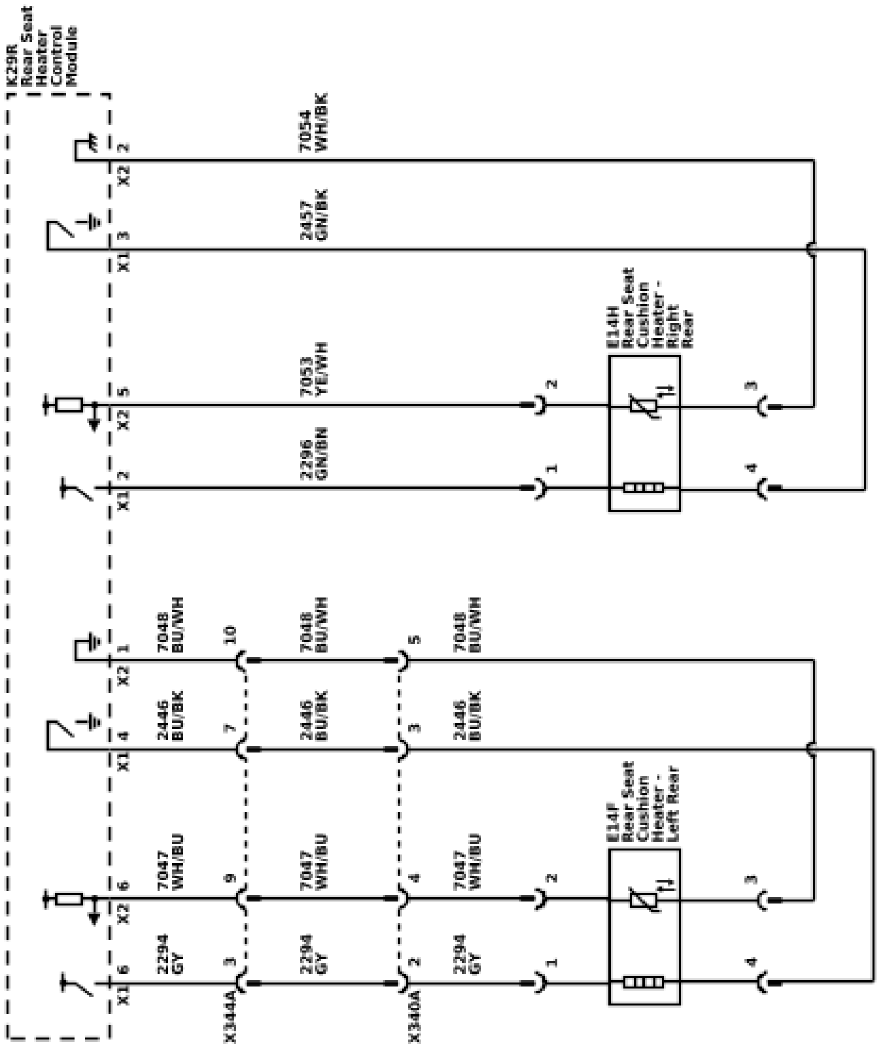
## Heated/Cooled Seat Schematics (Rear Seat Heating Control Module Power, Ground, Serial Data, and Controls (KA6))


B+
X53A Body Wiring Harness Junction Block - Rear
F34RA 15A
F22RA 10A
X1 43
26
X1 22
6740 RD/BU
5740 RD/WH
7540 RD/BN
X344A 2
1
X225A 27
6740 RD/BU
5740 RD/WH
7540 RD/BN
X1 7
10
10
B+
B+
K29R Rear Seat Heater Control Module
X1 8
X2 7
X2 8
1450 BK
1450 BK
2857 GN/VT
G408A
A34 Heater and Air Conditioning Auxiliary Control
A90 Logic
B+
11
1451 BK/WH
G302

6885742

6885743

## Heated/Cooled Seat Schematics (Rear Seat Heating Elements (KA6))


K29R
Rear Seat
Heater
Control
Module
X2 2
7054
WH/BK
X1 3
2457
GN/BK
E14H
Rear Seat
Cushion
Heater -
Right
Rear
X2 5
7053
YE/WH
X1 2
2296
GN/BN
2
1
3
4
X2 1
7048
BU/WH
10
7048
BU/WH
5
7048
BU/WH
X1 4
2446
BU/BK
7
2446
BU/BK
3
2446
BU/BK
E14F
Rear Seat
Cushion
Heater -
Left Rear
X2 6
7047
WH/BU
9
7047
WH/BU
4
7047
WH/BU
2
3
X1 6
2294
GY
3
2294
GY
2
2294
GY
1
4
X344A
X340A

# Description and Operation

## Heated/Vented Seat Description and Operation

### Heated and Vented Seat Components

The heated/vented seat system consists of the following components:

- Heated and vented seat switches
- Body control module
- Seat Heater Vent Control Module
- Driver seat cushion heating element
- Driver seat cushion temperature sensor
- Driver seat back heating element
- Driver seat back temperature sensor
- Driver seat cushion blower motor
- Driver seat back blower motor
- Passenger seat cushion heating element
- Passenger seat cushion temperature sensor
- Passenger seat back heating element
- Passenger seat back temperature sensor
- Passenger seat cushion blower motor
- Passenger seat back blower motor

### Heated/Vented Seat Switches

The driver and passenger heated and vented seats are operated through the A22 Radio Control. The BCM is the heated and vented seat system master. It monitors heated/vented seat switch activations to determine user requested operating mode. Based on the requested operating mode, the BCM sends a LIN Bus serial data message to the Seat Heater Vent Control Module how to drive the self-regulated heating pads or ventilation motors. The BCM also controls the indicators used to provide the operator with feedback as to the operating status of the system. With each press of the switch, the system will cycle through High, Medium, Low, and then back to Off again. The BCM also controls the seat temperature and mode indicators, via the serial data line, used to provide the operator with feedback as to the operating status of the system.

### Heated Seat Operation

The Seat Heater Vent Control Module controls heated seat operation for the driver and passenger seats. When active, power is applied to the seat cushion and back heater elements through a common pulse width modulated (PWM) voltage supply control circuit. Each individual heater element is switched to ground by the module through a common low side drive control circuit.

When inactive the Seat Heater Vent Control Module connects the heating element low side outputs to a common reference point internal to the module which is biased to approximately 3.5 V. The module uses this biased voltage in order to check the high side and low side control circuits for a short to battery or ground before enabling the driver and passenger seat heating elements. During heated seat operation, the Seat Heater Vent Control Module interrupts control of the heating elements every 10 s for approximately 10 ms to make this biased voltage check.

With both the seat cushion and seat back heater elements disconnected, if the high side output of the module is measured it will display a low current 12 V bleed off voltage. This bleed off voltage does not have a meaningful diagnostic purpose. With one or both of the heater elements connected you would just see the 3.5 V biased voltage from this circuit.

### Temperature Regulation

The seat back and cushion temperature sensors (thermistors) are packaged with the seat heating elements located just under the seat covers. The Seat Heater Vent Control Module supplies each temperature sensor with a 5 V reference signal circuit and a low reference circuit. The module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the module senses the seat reached the set temperature, it will then begin regulate the current flow through the heater elements in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

If the heated seats are on high, the temperature level may automatically be lowered after approximately 30 min of operation.

### Vented Seat Operation

Each vented seat consists of 2 blower motors, one in the seat back and one in the seat cushion. During vented seat operation, the vented seat blower motors draw cabin air through channels in the foam pad and small holes in the seat covers to pull heat away from the occupant.

With the Vehicle ON, battery voltage from the ignition main relay is applied through a 10 A fuse located in the rear body fuse block to the seat cushion and seat back blower motors. Ground for each blower motor is provided through separate ground circuits and a common ground connection.

When the front seat heater control module receives a ventilation seat command, it sends a low side drive pulse width modulation (PWM) signal through the blower motor control circuit to the seat back and cushion blower motors indicating the seat ventilation command. The logic in the blower motors sets the blower speed to the switch set point. The blower motors run causing a cooling effect to the occupant.

### Auto Heated Seat Operation with Vehicle ON

Refer to Heated and Ventilated Front Seats and Vehicle Personalization in the Owner’s Manual for information regarding Auto Heated and Ventilation Seat operation.

### Heated and Cooled Seat Operation During Remote Start

Refer to Vehicle Personalization in the Owner’s Manual for Remote Start Auto Heated and Ventilation Seats.

During remote start, the heated seats will turn ON when the ambient temperature is below 10° C (50° F).

During remote start, the seat ventilation system will turn ON when the ambient temperature is above 27° C (80° F).

### Load Shed Management

The electrical power management function is designed to monitor the vehicle electrical load and determine when the battery is potentially in a high discharge condition. The heated seat system is one of the vehicle loads that is subject to reduction during a battery discharge condition. For more information on load management refer to *Electrical Power Management Description and Operation 7-98*.

## Rear Heated Seats Description and Operation

### Heated Seat Components

The rear heated seat system consists of the following components:

- Rear heated seat switches
- Body control module
- Rear seat heating control module
- Left rear seat cushion heating element
- Left rear seat cushion temperature sensor
- Right rear seat cushion heating element
- Right rear seat cushion temperature sensor

### Heated Seat Switches

When a heated seat switch is pressed, a serial data message is sent to the body control module (BCM) indicating the heated seat command. The BCM serves as the heated seat system master to determine the requested operating mode. The BCM then sends a LIN bus serial data message to the Rear Seat Heater Vent Control Module indicating the heated seat command. In response to this message, the Rear Seat Heater Vent Control Module attempts to drive the appropriate seat heating element per the BCM command.

### Rear Heated Seat Operation

The Rear Seat Heater Vent Control Module controls heated seat operation for the left and right rear seats. When active, power is applied to the seat cushion and back heater elements through a pulse width modulated (PWM) voltage supply control circuit. Each individual heater element is switched to ground by the module through a low side drive control circuit.

When inactive the Rear Seat Heater Vent Control Module connects the heating element low side outputs to a common reference point internal to the control module which is biased to approximately 3.5 V. The control module uses this biased voltage in order to check the high side and low side control circuits for a short to battery or ground before enabling either the left or right rear seat heating element. During heated seat operation, the control module interrupts control of the heating elements every 10 s for approximately 10 ms to make this biased voltage check.

## Temperature Regulation

The seat cushion temperature sensor (thermistors) is packaged with the seat heating element located just under the seat cover. The Rear Seat Heater Vent Control Module supplies the temperature sensor with a 5 V reference signal circuit and a low reference circuit. The control module monitors the voltage from the signal circuit to determine the temperature of the seat.

The temperature sensor varies in resistance based on the temperature of the heating element causing the signal voltage to change. Once the Rear Seat Heater Vent Control Module senses the seat reached the set temperature, it will then begin regulating the current flow through the heater elements in order to maintain the desired seat temperature based on the feedback voltage from the sensor.

The temperature level may automatically be lowered after approximately 30 min of operation.

## Load Shed Management

The electrical power management function is designed to monitor the vehicle electrical load and determine when the battery is potentially in a high discharge condition. The heated seat system is one of the vehicle loads that is subject to reduction during a battery discharge condition. For more information on load management refer to *Electrical Power Management Description and Operation 7-98*.

# Section 13

# Steering

**Power Steering** .................................. 13-2

**Schematic and Routing Diagrams** ................................................ 13-2

Power Steering Schematics .................. 13-3

**Description and Operation** ................... 13-4

Power Steering System Description and Operation ............................................. 13-4

**Steering Wheel and Column** ............ 13-5

**Schematic and Routing Diagrams** ................................................ 13-5

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Tilt/Telescoping Steering Column Schematics ............................................. 13-9

**Description and Operation** ................. 13-10

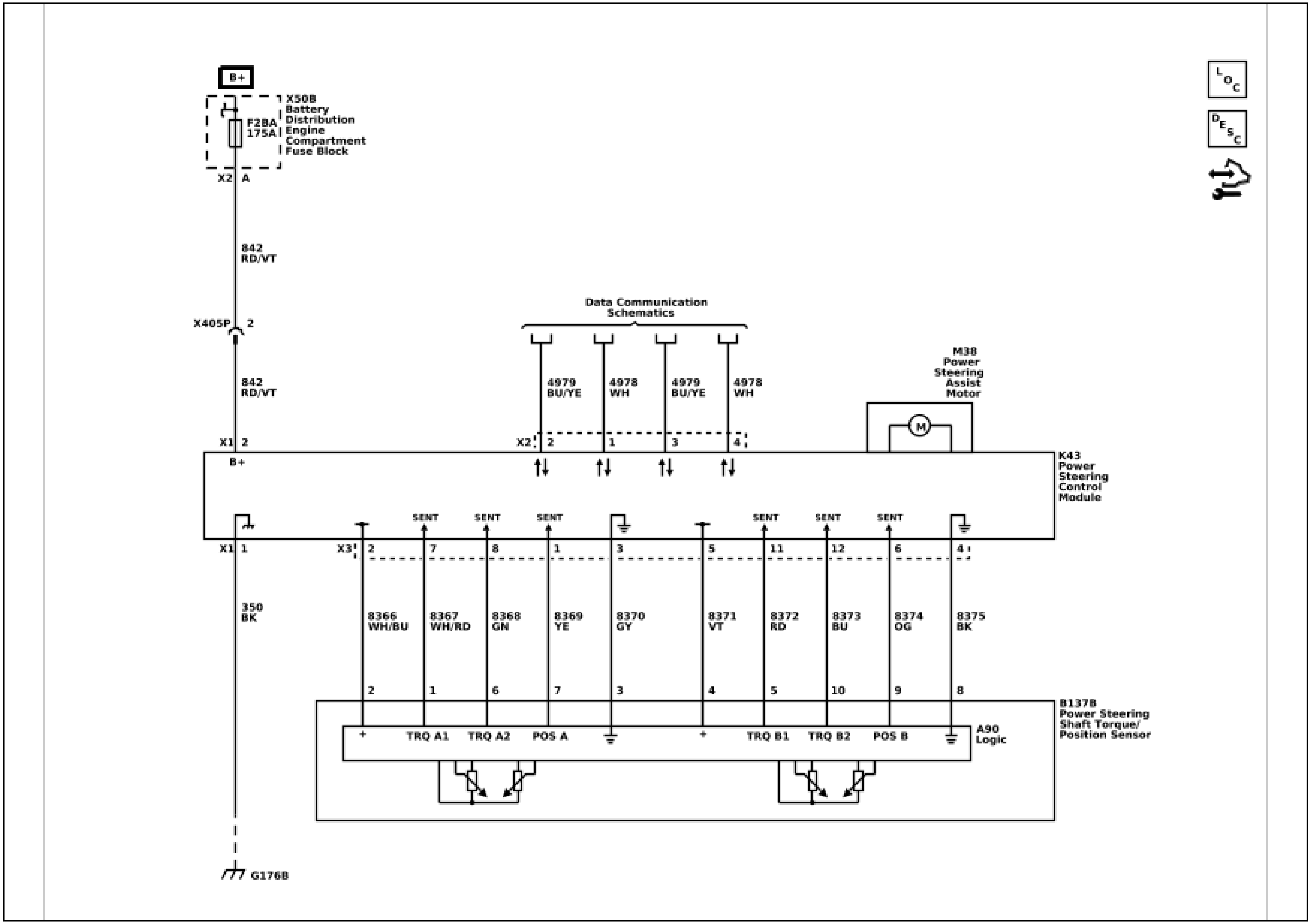
Steering Wheel and Column Description and Operation ..................................... 13-10

# Steering

## Power Steering

### Schematic and Routing Diagrams

# Power Steering Schematics (Electric Power Steering)


B+
X50B Battery Distribution Engine Compartment Fuse Block
F28A 175A
X2 A
842 RD/VT
X405P 2
842 RD/VT
X1 2
B+
X1 1
350 BK
G176B
Data Communication Schematics
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
X2 2 1 3 4
M38 Power Steering Assist Motor
M
K43 Power Steering Control Module
SENT
SENT
SENT
SENT
SENT
SENT
X3 2 7 8 1 3 5 11 12 6 4
8366 WH/BU
8367 WH/RD
8368 GN
8369 YE
8370 GY
8371 VT
8372 RD
8373 BU
8374 OG
8375 BK
2 1 6 7 3 4 5 10 9 8
B137B Power Steering Shaft Torque/ Position Sensor
A90 Logic
+
TRQ A1
TRQ A2
POS A
+
TRQ B1
TRQ B2
POS B
6885744

# Description and Operation

## Power Steering System Description and Operation

The power steering system consists of the following components:

- The power steering control module
- The power steering motor
- The power steering shaft torque/position sensor
- The steering gear (rack and dual pinion)

The rack and dual pinion electric power steering system reduces the amount of effort needed to steer the vehicle utilizing the power steering control module to control the power steering motor to maneuver the steering gear. The power steering control module also uses a combination of the shaft torque, position sensor, battery voltage, vehicle speed and engine speed via CAN serial data circuit to perform the system functions. Refer to *Data Communication Schematics 9-3* for vehicle CAN configuration. At low speeds more assist is provided for easy turning during parking maneuvers. At higher speeds less assist is provided for improved road feel and directional stability.

The power steering control module uses a combination of the shaft torque, position sensor, vehicle speed, and calculated system temperature inputs to determine the amount of assist needed. The power steering control module continuously monitors the digital torque sensor's torque and index current signals. As the steering wheel is turned and torsional twist is applied to the steering shaft, the steering input and output shafts are monitored via the torque signal circuit and then processed by the power steering control module to calculate the steering torque. The voltage signals of the motor position sensor and the digital torque sensor's index current signal are both processed by the power steering control module to detect and calculate the steering wheel angle.

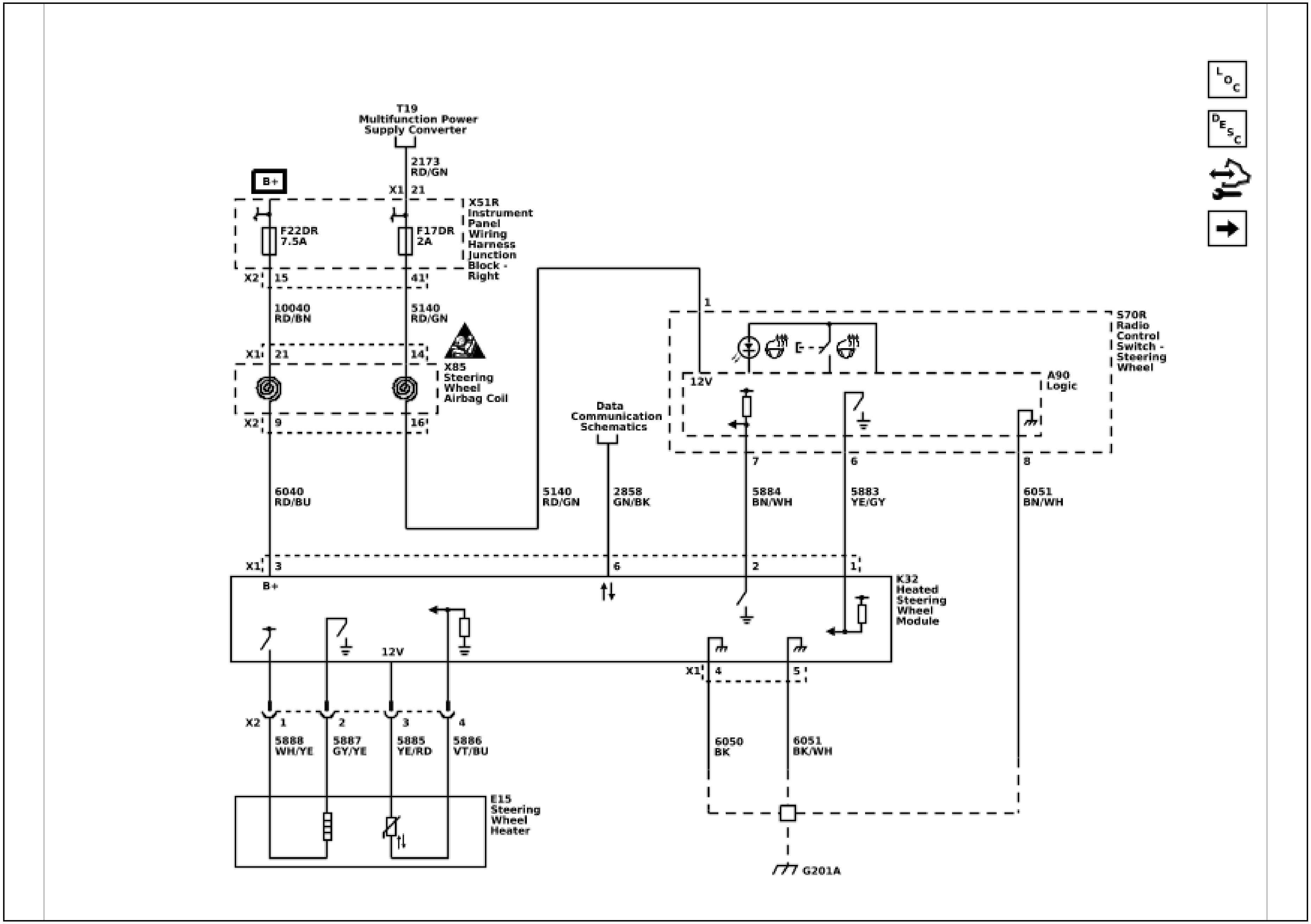
The power steering control module responds to the change in the digital torque sensor signals as well as the motor shaft torque/position sensor's voltage signals by commanding current to the power steering motor. The power steering control module controls the pulse width modulated motor drive circuit to drive the 3-phase motor. The power steering control module and motor assembly is attached to the base of the steering gear housing and assists the steering gear pinion to maneuver the rack from left to right according to turning the steering wheel.

The power steering control module has the ability to calculate an internal system temperature to protect the power steering system from damage caused by high temperature. To reduce a high system temperature, the power steering control module will reduce the amount of current commanded to the power steering motor, which reduces the amount of steering assist. The power steering control module has the ability to detect malfunctions within the electric power steering system. Any malfunction detected that disables steering assist will cause the SERVICE POWER STEERING message to be displayed on the driver information center.

# Steering Wheel and Column

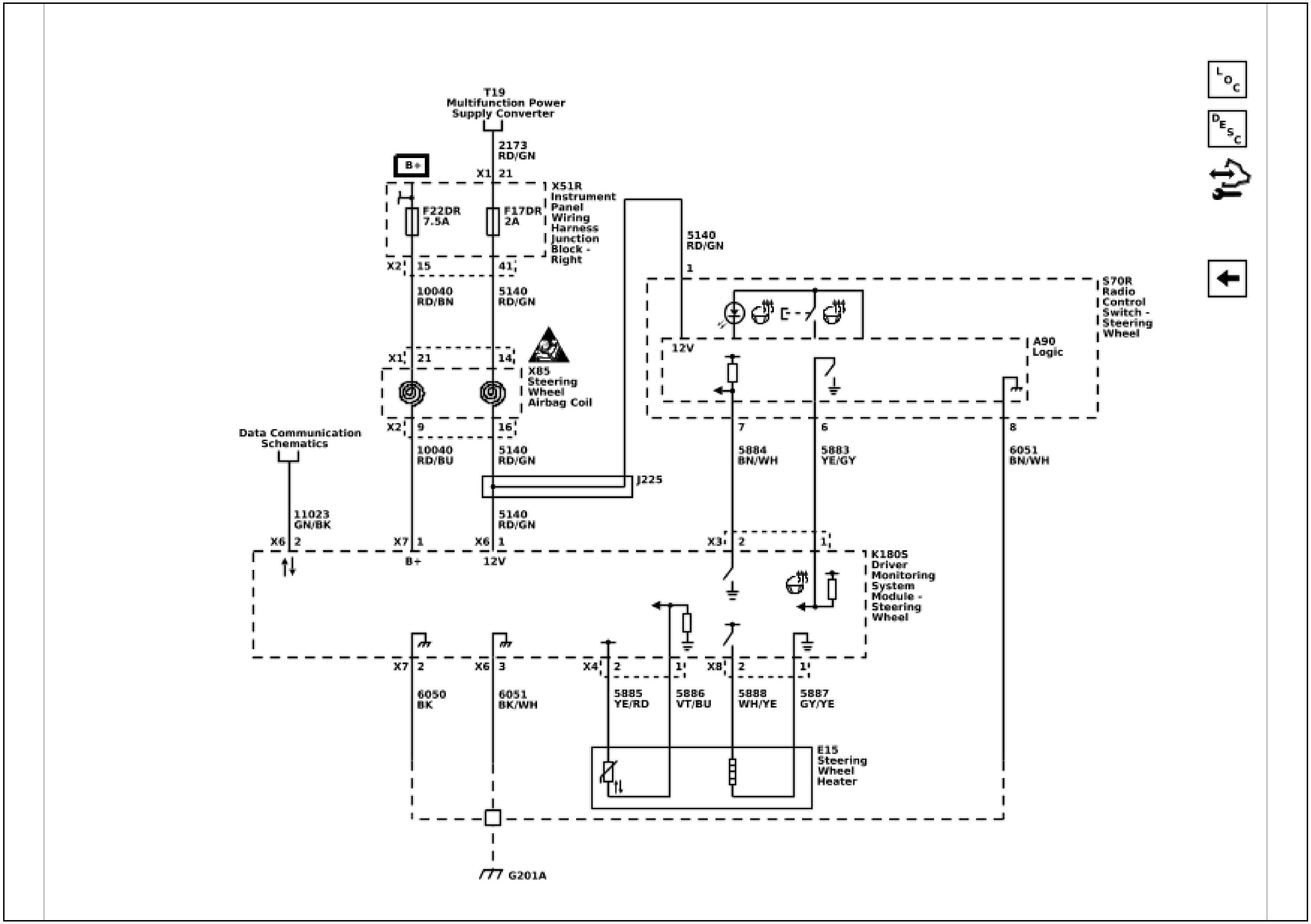
## Schematic and Routing Diagrams

## Steering Wheel Schematics (Heated Steering Wheel (KI3 - UKL))


T19
Multifunction Power
Supply Converter
2173
RD/GN
B+
X1 21
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F22DR
7.5A
F17DR
2A
X2 15
41
10040
RD/BN
5140
RD/GN
X1 21
14
X85
Steering
Wheel
Airbag Coil
X2 9
16
6040
RD/BU
5140
RD/GN
Data
Communication
Schematics
2858
GN/BK
1
12V
S70R
Radio
Control
Switch -
Steering
Wheel
A90
Logic
7
6
8
5884
BN/WH
5883
YE/GY
6051
BN/WH
X1 3
6
2
1
B+
K32
Heated
Steering
Wheel
Module
12V
X1 4
5
X2 1
2
3
4
5888
WH/YE
5887
GY/YE
5885
YE/RD
5886
VT/BU
6050
BK
6051
BK/WH
E15
Steering
Wheel
Heater
G201A

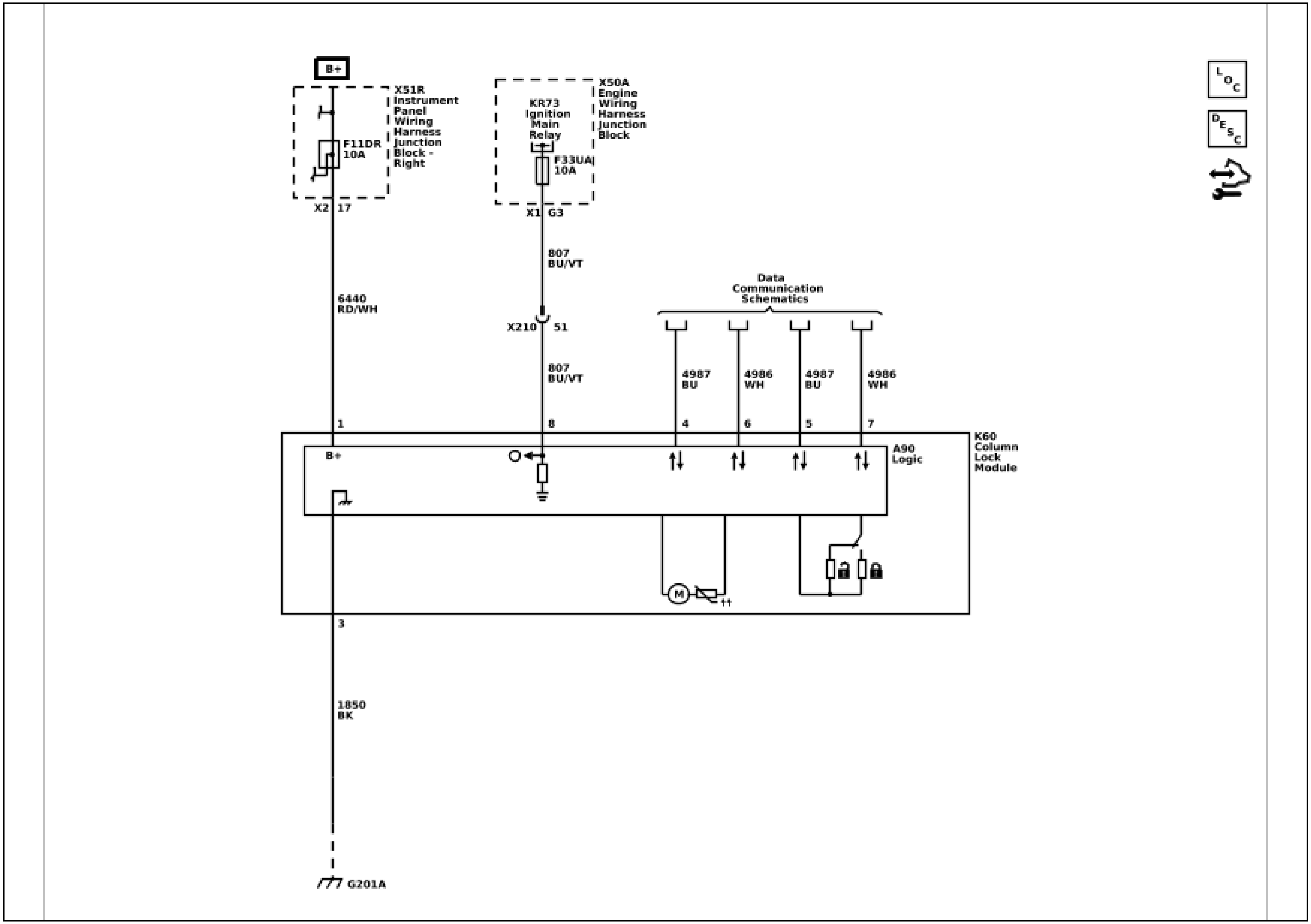
6885745

## Steering Wheel Schematics (Heated Steering Wheel (KI3 & UKL))

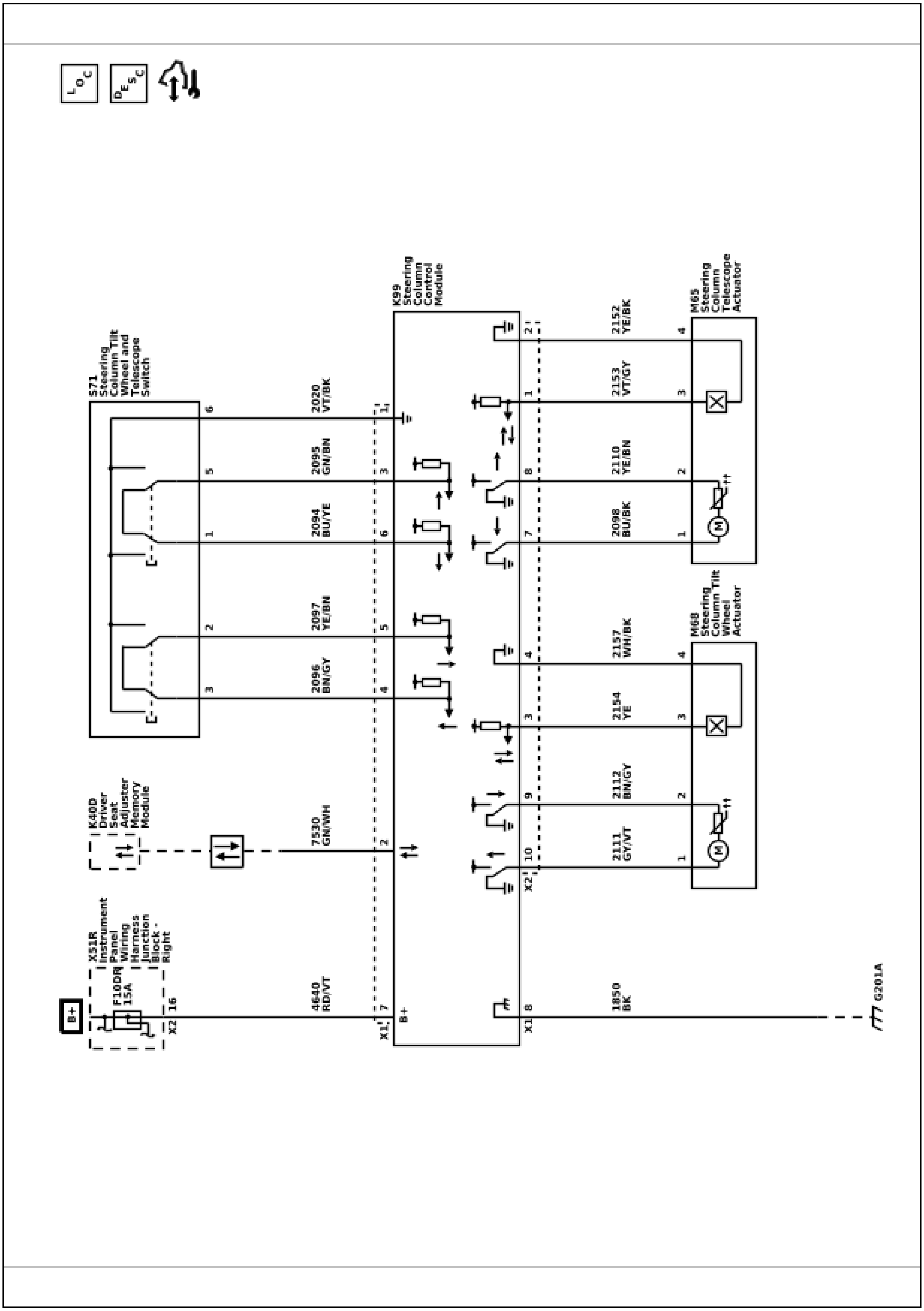

T19 Multifunction Power Supply Converter
2173 RD/GN
X1 21
B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F22DR 7.5A
F17DR 2A
X2 15
41
10040 RD/BN
5140 RD/GN
X1 21
14
X85 Steering Wheel Airbag Coil
X2 9
16
10040 RD/BU
5140 RD/GN
J225
5140 RD/GN
Data Communication Schematics
11023 GN/BK
X6 2
X7 1
B+
X6 1
12V
5140 RD/GN
1
S70R Radio Control Switch - Steering Wheel
12V
A90 Logic
7
6
8
5884 BN/WH
5883 YE/GY
6051 BN/WH
X3 2
1
K1805 Driver Monitoring System Module - Steering Wheel
X7 2
X6 3
X4 2
1
X8 2
1
6050 BK
6051 BK/WH
5885 YE/RD
5886 VT/BU
5888 WH/YE
5887 GY/YE
E15 Steering Wheel Heater
G201A

6885746

## Column Lock Schematics (Steering Column Lock)


B+
X51R Instrument Panel Wiring Harness Junction Block - Right
F11DR 10A
X2 17
6440 RD/WH
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F33UA 10A
X1 G3
807 BU/VT
X210 51
807 BU/VT
Data Communication Schematics
4987 BU
4986 WH
4987 BU
4986 WH
1
8
4
6
5
7
B+
A90 Logic
K60 Column Lock Module
M
3
1850 BK
G201A
6885747

## Tilt/Telescoping Steering Column Schematics (Tilt/Telescoping Steering Column (N38))


6885748
LOC
DESC
B+
F10DR 15A
X2 16
X51R Instrument Panel Wiring Harness Junction Block - Right
K40D Driver Seat Adjuster Memory Module
S71 Steering Column Tilt Wheel and Telescope Switch
6
5
1
2
3
4640 RD/VT
7530 GN/WH
2096 BN/GY
2097 YE/BN
2094 BU/YE
2095 GN/BN
2020 VT/BK
X1 7
2
4
5
6
3
1
B+
K99 Steering Column Control Module
X1 8
X2 10
9
3
4
7
8
1
2
1850 BK
2111 GY/VT
2112 BN/GY
2154 YE
2157 WH/BK
2098 BU/BK
2110 YE/BN
2153 VT/GY
2152 YE/BK
1
2
3
4
M
M68 Steering Column Tilt Wheel Actuator
M65 Steering Column Telescope Actuator
G201A

# Description and Operation

## Steering Wheel and Column Description and Operation

### Column Lock (if equipped)

The Column Lock Module (CLM) controls the steering wheel theft deterrent lock function, which allows the column to be electronically locked. When a valid key is used to start the vehicle, the BCM recognizes this and will send the encrypted password to the CLM. The CLM will compare its own stored password to the encrypted password sent by the BCM. If the data matches, the steering column will be unlocked.

In order for the steering column to be locked the CLM has to see 3 inputs.

1. The BCM power mode is OFF.
2. The vehicle is stationary based on zero speed reported from all ABS wheel speed sensors.
3. The driver door is reported open by the BCM.

When the CLM receives these inputs, the steering column will be locked.

The CLM monitors the column lock system and will set DTC codes when the module detects malfunctions within the system. When a malfunction occurs the driver information center (DIC) will display the Service Column Lock Now message indicating DTC codes are set within the CLM. The immobilizer system will prevent vehicle starting if there is a fault or no communication with the CLM.

### Tilt/Telescoping Description (if equipped)

The steering column has a tilt/telescoping control system that consists of an electronic control module capable of LIN message communication, a steering column power assembly with positioning actuators and sensors, and a steering column control switch.

**Column Position Module has two versions of operation:**

1. N38 – Power Steering Column-Tilt/Telescope, and A45 – Memory Seats

   The column position module will wake up either by the LIN bus or by the tilt/telescope steering column switch. The memory seat module is the master and column position module is the slave. All DTCs and the data from column position module are reported through the LIN bus and stored in the memory seat module.

2. N38 – Power Steering Column-Tilt/Telescope Only

   The column position module will wake up with the tilt/telescope steering column switch. No DTCs or data is available. Vehicle symptoms will cause the customer to bring the vehicle in for service.

**Tilt/Telescoping Switch Operation**

The tilt/telescope steering column has a four-position switch. The switch may be used to adjust the position of the steering wheel in or out which is telescope and up or down which is tilt. The position of the column may be changed as follows:

- Press the switch up to tilt the column up.
- Press the switch down to tilt the column down.
- Press the switch forward and the column moves toward the front of the vehicle.
- Press the switch rearward and the column moves toward the rear of the vehicle.

**Actuators**

Both the tilt and telescoping actuators are reversible. For example, the tilt actuator moves the column both up and down. When the column position module receives an input to move the column up, the column position module supplies battery positive voltage and ground to the tilt actuator in order to move the column up. When the column position module receives a column down input, the column position module supplies battery positive voltage and ground to the same actuator, but with reverse polarity. When the voltage polarity is reversed, the actuator runs in the opposite direction and moves the column down.

**Position Sensors with A45 Memory Seats**

Two position sensors are Hall Effect sensors and are used by the column position module. The column position module provides a 5 V reference voltage and a ground to both the tilt and telescoping position sensors. The sensor feedback circuit voltage varies from 0–5 V. Each sensor is part of the actuator assembly. When the actuator rotates, the voltage of the sensor varies on the scan tool. The column position module monitors the feedback voltage to determine the column position.

Without the A45 Memory Seat option, scan tool data is not available.

**Tilt/Telescoping Memory with A45 Memory Seats**
Memory settings and the personalization of steering wheel positions are available with the tilt/telescoping steering column only with the A45 Memory Seat option. The data stored consists of entry positions and exit positions. The entry position is the position that the steering column moves in when the ignition is turned ON. The exit position is the direction that the steering column moves in when the ignition is turned OFF and the driver's door is opened. The memory seat module stores memory positions and commands column position module to move actuators to specific positions through a LIN message.

An initial memory setting is set in the memory seat module at the assembly plant. This setting may be changed by the customer at any time.

Without the A45 Memory Seat option, memory settings, personalization, and the entry and exit function is not available.

## Driver Safety

The steering wheel and column has safety features to protect the driver. The following components may be mounted on or near the steering column:

**Energy-Absorbing Steering Column:** The energy-absorbing steering column compresses in the event of a front-end collision, which reduces the chance of injury to the driver. The energy-absorbing feature, collapsible steering shaft, and break away mounting features help reduce the injury in the event of an accident.

## Heated Steering Wheel (if equipped)

The heated steering wheel system consists of a heated steering wheel, a heated steering wheel switch, and a K32 Heated Steering Wheel Module. The heated steering wheel includes non-serviceable heating elements and a temperature sensor. The heating elements and sensor are located in the left and right sides of the rim of the steering wheel. The heated steering wheel switch is located in the left steering wheel control switch assembly. The steering wheel heat control module is located at the bottom of the steering wheel center hub. When the switch is pressed, the switch signal circuit is grounded and the heat module turns the heated steering wheel on. The system then remains on until the customer turns it off. The wheels normal operating temperature is 32°C (89.6°F). The wheel takes approximately 3 to 4 minutes to reach the normal operating temperature. The wheel will take longer to heat up if the vehicle temperature is below -21°C (-5.8°F). The built-in temperature sensor provides input to the controller to limit the temperature to the normal operating temperature. The wheel will not operate if the vehicle temperature is at or above 32°C (89.6°F).

The heated steering wheel control module is on the LIN bus. This allows the heated steering wheel to be activated during remote vehicle start.

For vehicles equipped with UKL, the K180S Driver Monitoring System Module controls the steering wheel heater, the steering wheel LED display and the steering wheel touch sensors. The K180S Driver Monitoring System Module - Steering Wheel is integral to the steering wheel and cannot be replaced by itself. The K180S Driver Monitoring System Module - Steering Wheel is also a LIN device to the K124 Image Processing Module.

# Section 14

# Transmission

**Automatic Transmission - 10L80** .................................................. **14-2**
  **Schematic and Routing Diagrams** .............................................. **14-2**
    Automatic Transmission Controls Schematics ............................................ 14-3
  **Description and Operation** .................. **14-8**
    Transmission Component and System Description ........................................... 14-8
**Electronic Transmission Range Select** .................................................. **14-9**
  **Schematic and Routing Diagrams** .............................................. **14-9**
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**Transfer Case - MP 3015** ................. **14-12**
  **Schematic and Routing Diagrams** .............................................. **14-12**
    Transfer Case Control Schematics ..... 14-13
  **Description and Operation** ................. **14-16**
    Transfer Case Description and Operation ........................................... 14-16
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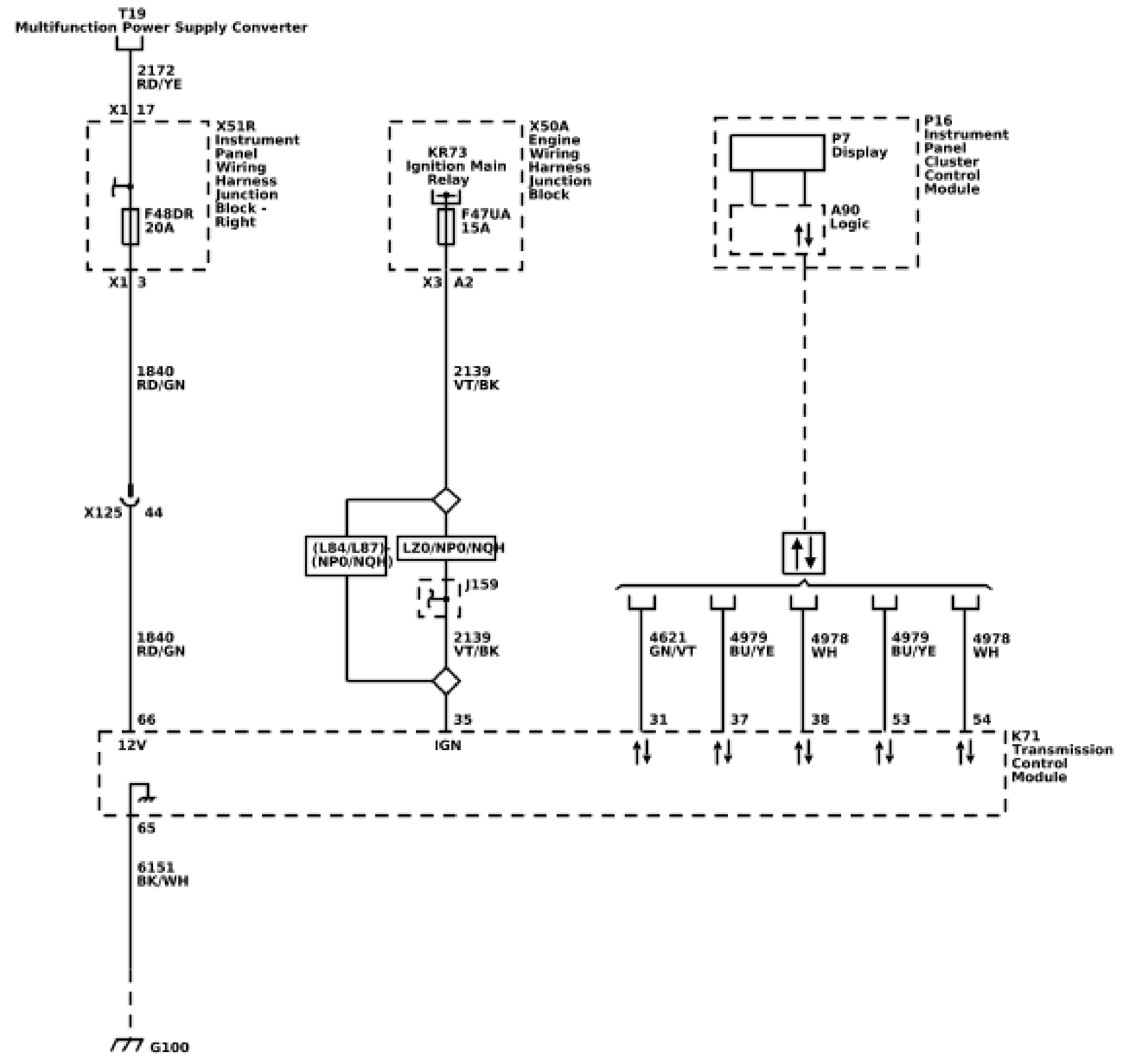
  **Schematic and Routing Diagrams** .............................................. **14-26**
    Transfer Case Control Schematics ..... 14-27

# Transmission

## Automatic Transmission - 10L80

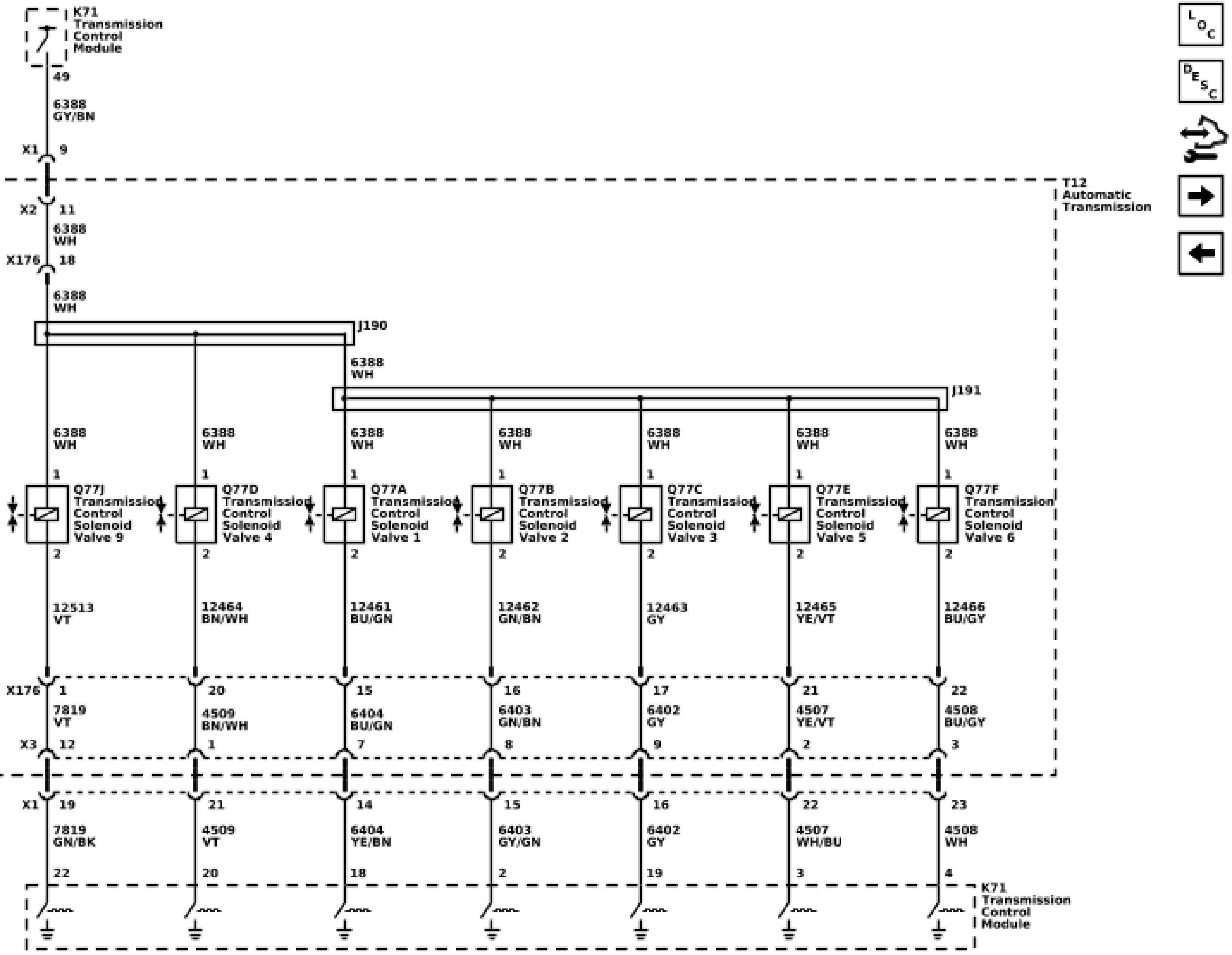
### Schematic and Routing Diagrams

## Automatic Transmission Controls Schematics (Power, Ground, Serial Data, and MIL)


T19
Multifunction Power Supply Converter
2172
RD/YE
X1 17
X51R
Instrument
Panel
Wiring
Harness
Junction
Block -
Right
F48DR
20A
X1 3
1840
RD/GN
X125 44
1840
RD/GN
66
12V
65
6151
BK/WH
G100
X50A
Engine
Wiring
Harness
Junction
Block
KR73
Ignition Main
Relay
F47UA
15A
X3 A2
2139
VT/BK
(L84/L87)
(NP0/NQH)
LZ0/NP0/NQH
J159
2139
VT/BK
35
IGN
P16
Instrument
Panel
Cluster
Control
Module
P7
Display
A90
Logic
4621
GN/VT
4979
BU/YE
4978
WH
4979
BU/YE
4978
WH
31
37
38
53
54
K71
Transmission
Control
Module

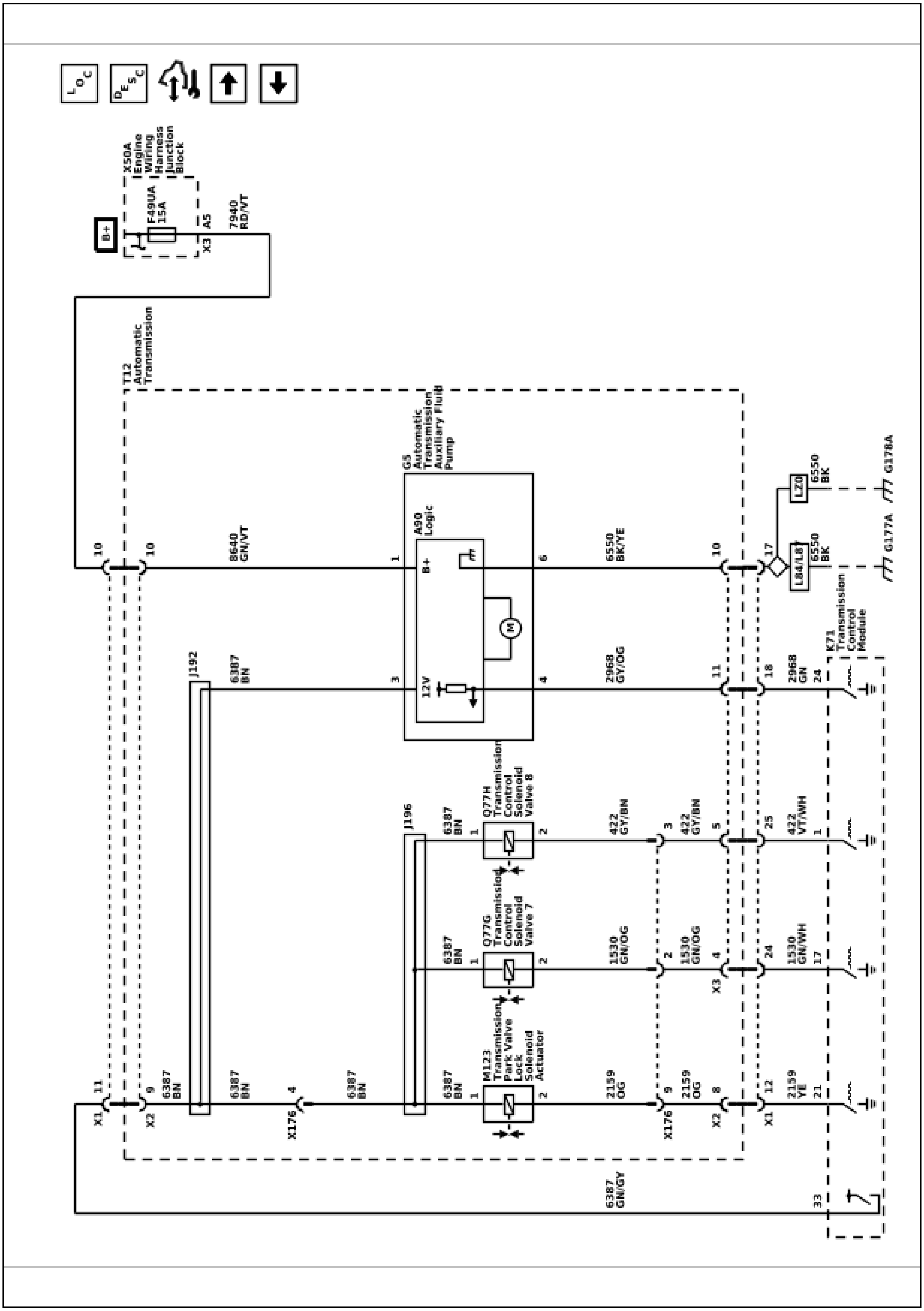
6885753

## Automatic Transmission Controls Schematics (Pressure and Shift Controls 1 of 2)

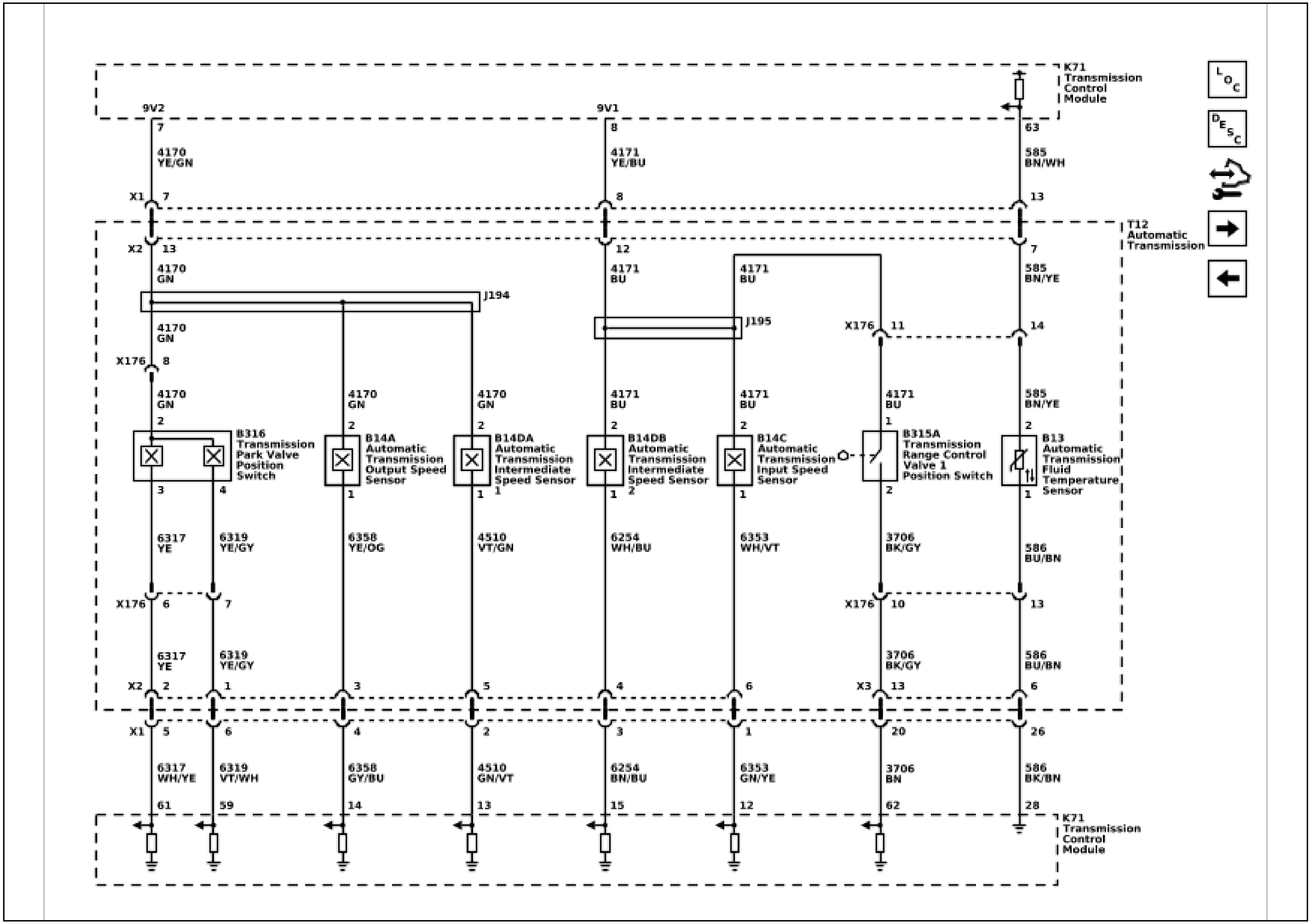

K71 Transmission Control Module
49
6388 GY/BN
X1 9
X2 11
6388 WH
X176 18
6388 WH
J190
6388 WH
J191
T12 Automatic Transmission
6388 WH
1
Q77J Transmission Control Solenoid Valve 9
Q77D Transmission Control Solenoid Valve 4
Q77A Transmission Control Solenoid Valve 1
Q77B Transmission Control Solenoid Valve 2
Q77C Transmission Control Solenoid Valve 3
Q77E Transmission Control Solenoid Valve 5
Q77F Transmission Control Solenoid Valve 6
2
12513 VT
12464 BN/WH
12461 BU/GN
12462 GN/BN
12463 GY
12465 YE/VT
12466 BU/GY
X176 1
20
15
16
17
21
22
7819 VT
4509 BN/WH
6404 BU/GN
6403 GN/BN
6402 GY
4507 YE/VT
4508 BU/GY
X3 12
1
7
8
9
2
3
X1 19
21
14
15
16
22
23
7819 GN/BK
4509 VT
6404 YE/BN
6403 GY/GN
6402 GY
4507 WH/BU
4508 WH
22
20
18
2
19
3
4
K71 Transmission Control Module
LOC
DESC

6885754

## Automatic Transmission Controls Schematics (Pressure and Shift Controls 2 of 2)

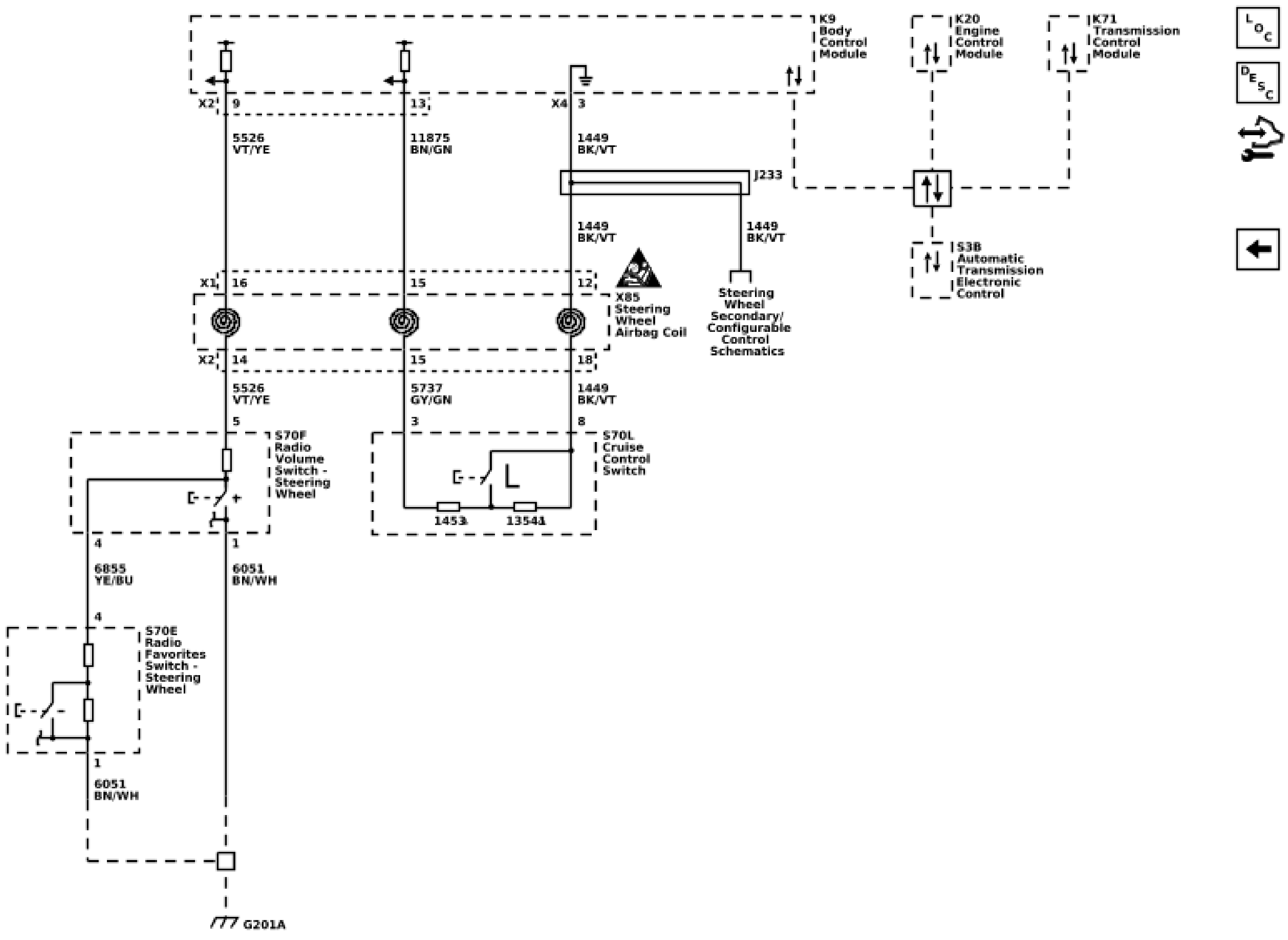

6885755
B+
F49UA 15A
X50A Engine Wiring Harness Junction Block
X3 A5
7940 RD/VT
T12 Automatic Transmission
G5 Automatic Transmission Auxiliary Fluid Pump
A90 Logic
B+
12V
M
8640 GN/VT
6550 BK/YE
6387 BN
2968 GY/OG
J192
J196
Q77H Transmission Control Solenoid Valve 8
Q77G Transmission Control Solenoid Valve 7
M123 Transmission Park Valve Lock Solenoid Actuator
422 GY/BN
422 VT/WH
1530 GN/OG
1530 GN/WH
2159 OG
2159 YE
6387 GN/GY
X1
X2
X3
X176
L84/L87
LZ0
6550 BK
G177A
G178A
K71 Transmission Control Module
10
11
9
4
1
2
3
5
6
8
12
17
18
21
24
25
33

## Automatic Transmission Controls Schematics (Speed, Temperature, and Park Valve Inputs)


K71 Transmission Control Module
9V2
7
4170 YE/GN
X1 7
X2 13
4170 GN
J194
4170 GN
X176 8
4170 GN
2
B316 Transmission Park Valve Position Switch
3
4
6317 YE
6319 YE/GY
X176 6
7
6317 YE
6319 YE/GY
X2 2
1
X1 5
6
6317 WH/YE
6319 VT/WH
61
59
4170 GN
2
B14A Automatic Transmission Output Speed Sensor
1
6358 YE/OG
3
4
6358 GY/BU
14
4170 GN
2
B14DA Automatic Transmission Intermediate Speed Sensor 1
1
4510 VT/GN
5
2
4510 GN/VT
13
9V1
8
4171 YE/BU
8
12
4171 BU
J195
4171 BU
2
B14DB Automatic Transmission Intermediate Speed Sensor 2
1
6254 WH/BU
4
3
6254 BN/BU
15
4171 BU
4171 BU
2
B14C Automatic Transmission Input Speed Sensor
1
6353 WH/VT
6
1
6353 GN/YE
12
X176 11
4171 BU
1
B315A Transmission Range Control Valve 1 Position Switch
2
3706 BK/GY
X176 10
3706 BK/GY
X3 13
20
3706 BN
62
63
585 BN/WH
13
T12 Automatic Transmission
7
585 BN/YE
14
585 BN/YE
2
B13 Automatic Transmission Fluid Temperature Sensor
1
586 BU/BN
13
586 BU/BN
6
26
586 BK/BN
28
K71 Transmission Control Module
LOC
DESC

6885756

## Automatic Transmission Controls Schematics (Tap Up/Tap Down Switches)


LOC
DESC
K9 Body Control Module
K20 Engine Control Module
K71 Transmission Control Module
S38 Automatic Transmission Electronic Control
X2 9
13
X4 3
5526 VT/YE
11875 BN/GN
1449 BK/VT
J233
1449 BK/VT
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
X1 16
15
12
X85 Steering Wheel Airbag Coil
X2 14
15
18
5526 VT/YE
5737 GY/GN
1449 BK/VT
5
3
8
S70F Radio Volume Switch - Steering Wheel
S70L Cruise Control Switch
1453
13541
4
1
6855 YE/BU
6051 BN/WH
4
S70E Radio Favorites Switch - Steering Wheel
1
6051 BN/WH
G201A

6885757

# Description and Operation

## Transmission Component and System Description

The mechanical components of the 10-Speed RWD are as follows:

- A torque converter with an electronically controlled capacity clutch (ECCC). ECCC was developed to reduce the possibility of noise, vibration, or chuggle caused by TCC apply. In a torque converter with ECCC, the pressure plate does not always fully lock to the torque converter cover. Instead, the pressure plate maintains a small amount of slippage. In RWD 10-Speed transmissions, this slippage can range from 0–50 RPM. Full lockup (0 RPM slip) is still available on some applications. TCC may apply in 1st trough 10th gear. The specific TCC apply points and the amount of clutch slippage are determined by a number of operating conditions, including throttle position, vehicle speed, gear, as well as specific vehicle application. Transmission fluid temperature will also affect TCC apply points.
- Vairable Vane-Type Fluid Pump Assembly
- 1-2-3-4-5-6-Reverse Clutch
- 1-2-8-9-10-Reverse Clutch
- 2-3-4-5-7-9-10 Clutch
- 1-2-3-4-6-7-8-10-Reverse Clutch
- 1-3-5-6-7-8-9 Clutch
- 4-5-6-7-8-9-10-Reverse Clutch
- Low Clutch Roller
- Reaction Internal Gear
- Reaction Carrier
- Reaction Sun Gear Assembly
- Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel
- Input Sun Gear
- Input Carrier Assembly
- Direct Overdrive Sun Gear Shaft
- Direct Overdrive Carrier
- Direct Overdrive Sun Gear
- Output Carrier Internal Gear
- Output Carrier Assembly
- Output Shaft
- Control Valve Body Assembly

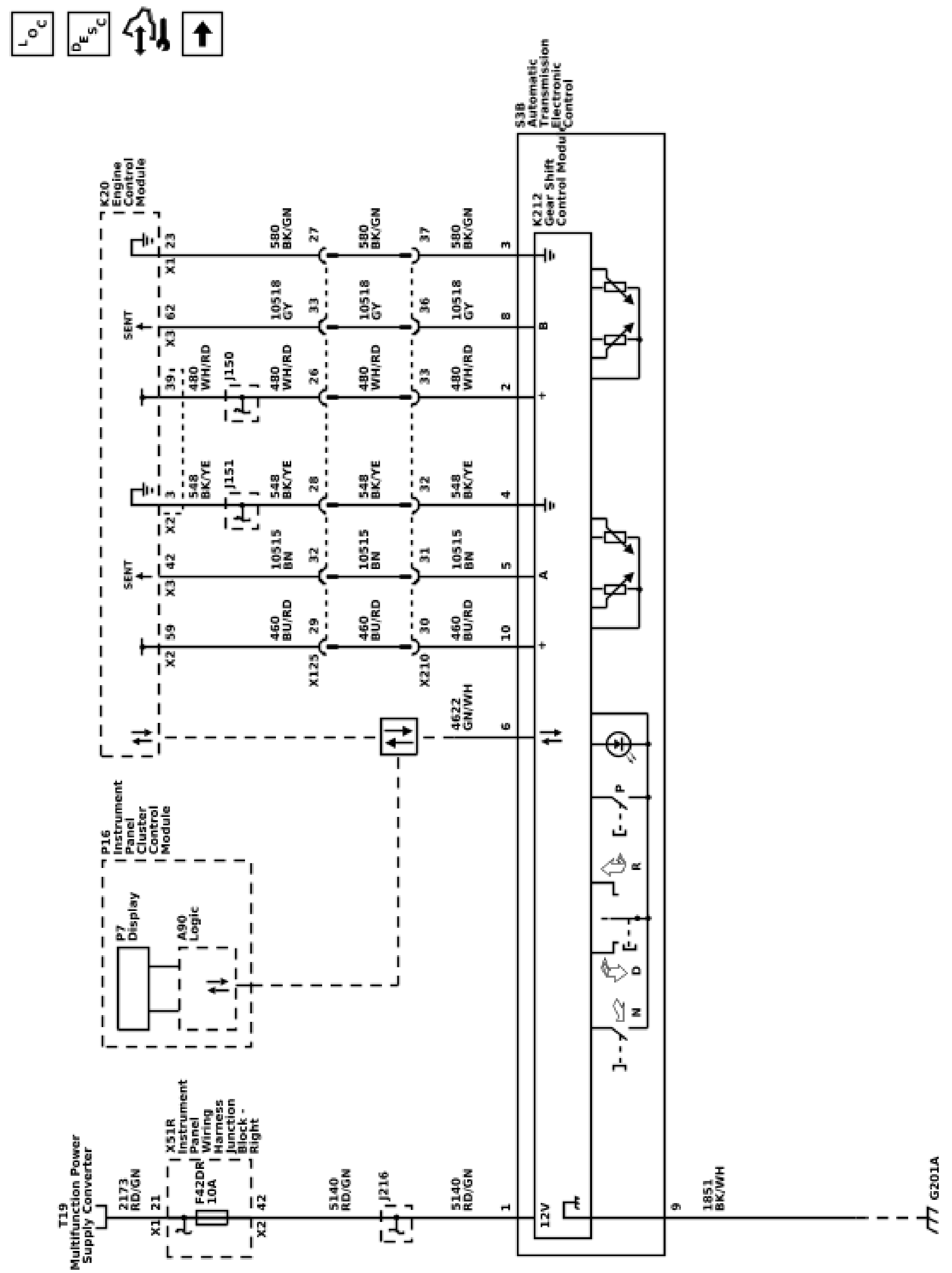
The electrical components of the 10-Speed RWD are as follows:

- Automatic Transmission Turbine Speed Sensor
- Automatic Transmission Intermediate Speed Sensor [2x]
- Automatic Transmission Output Speed Sensor
- Manual Shift Shaft Position Switch
- Control Solenoid Valve Body, which contains the following components:
  - 6 Transmission Control Solenoids
  - Torque Converter Clutch Solenoid Valve
  - Line Pressure Control Solenoid Valve

# Electronic Transmission Range Select

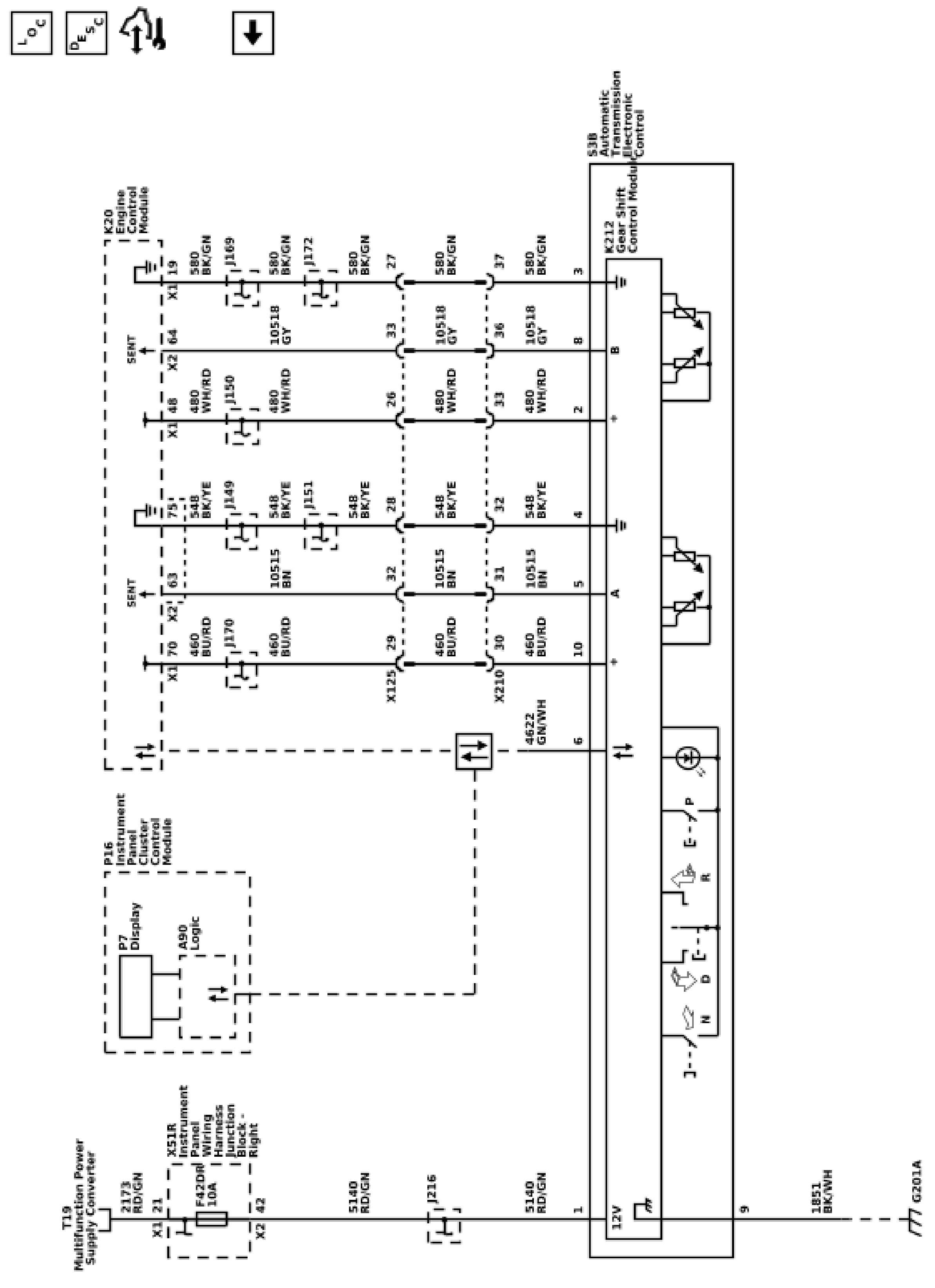
## Schematic and Routing Diagrams

## Electronic Transmission Range Selector Schematics (Electronic Shift Controls (L84 / L87))


T19 Multifunction Power Supply Converter
2173 RD/GN
X1 21
X51R Instrument Panel Wiring Harness Junction Block - Right
F42DR 10A
X2 42
5140 RD/GN
J216
5140 RD/GN
1
12V
9
1851 BK/WH
G201A
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
K20 Engine Control Module
X2 59
X3 42
SENT
X2 3
39
X3 62
SENT
X1 23
460 BU/RD
10515 BN
548 BK/YE
J151
480 WH/RD
J150
10518 GY
580 BK/GN
29
32
28
26
33
27
X125
30
31
32
33
36
37
X210
4622 GN/WH
6
10
5
4
2
8
3
+
A
+
B
S38 Automatic Transmission Electronic Control
K212 Gear Shift Control Module
N
D
R
P

6885758

## Electronic Transmission Range Selector Schematics (Electronic Shift Controls (LZ0))

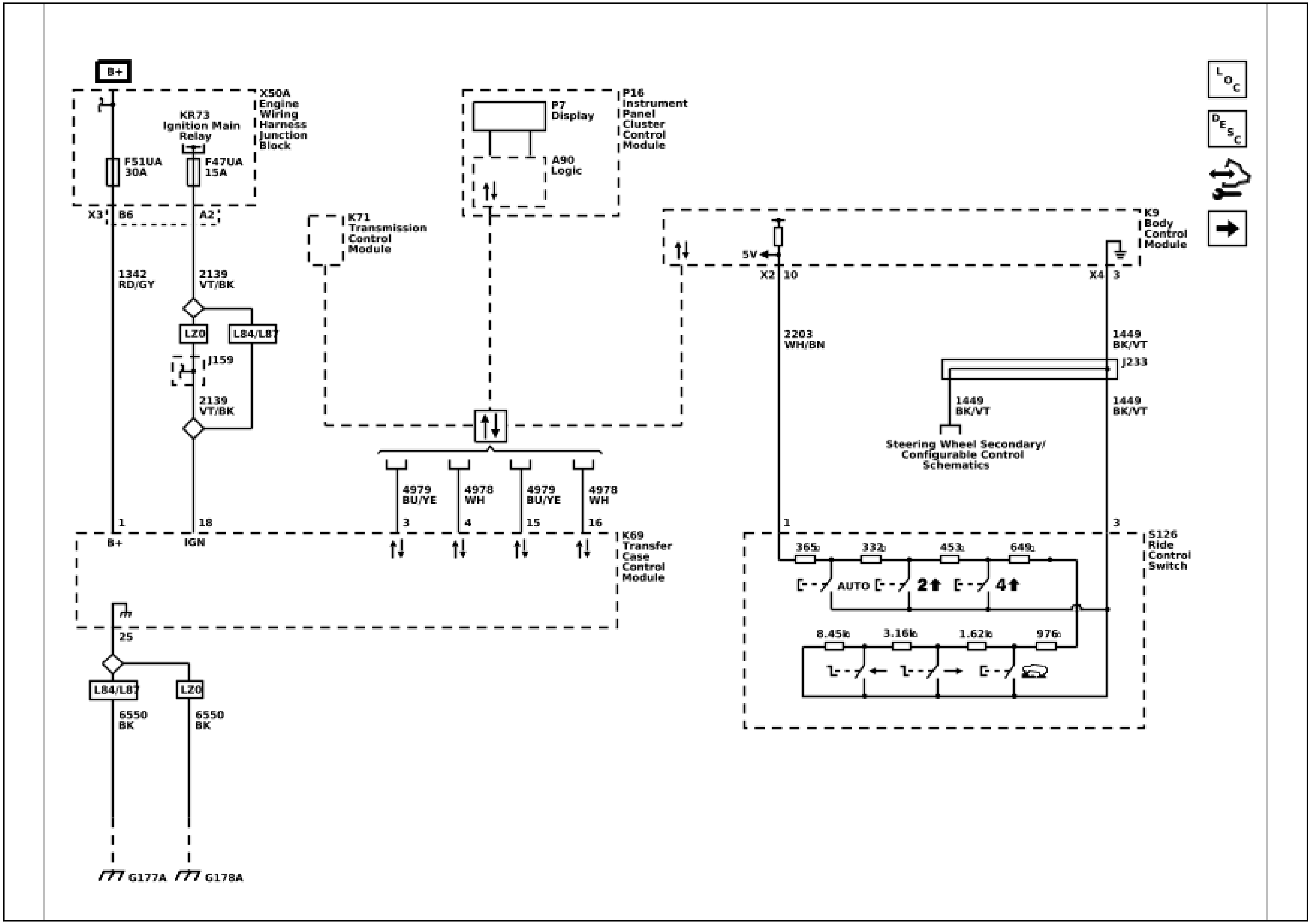

T19 Multifunction Power Supply Converter
2173 RD/GN
X1 21
X51R Instrument Panel Wiring Harness Junction Block - Right
F42DR 10A
X2 42
5140 RD/GN
J216
5140 RD/GN
1
12V
9
1851 BK/WH
G201A
P16 Instrument Panel Cluster Control Module
P7 Display
A90 Logic
4622 GN/WH
6
K20 Engine Control Module
X1 70
460 BU/RD
J170
460 BU/RD
29
460 BU/RD
30
460 BU/RD
10
X125
X210
SENT
X2 63
10515 BN
32
10515 BN
31
10515 BN
5
A
X1 75
548 BK/YE
J149
548 BK/YE
J151
548 BK/YE
28
548 BK/YE
32
548 BK/YE
4
X1 48
480 WH/RD
J150
480 WH/RD
26
480 WH/RD
33
480 WH/RD
2
SENT
X2 64
10518 GY
33
10518 GY
36
10518 GY
8
B
X1 19
580 BK/GN
J169
580 BK/GN
J172
580 BK/GN
27
580 BK/GN
37
580 BK/GN
3
S38 Automatic Transmission Electronic Control
K212 Gear Shift Control Module
P
R
D
N

6885759

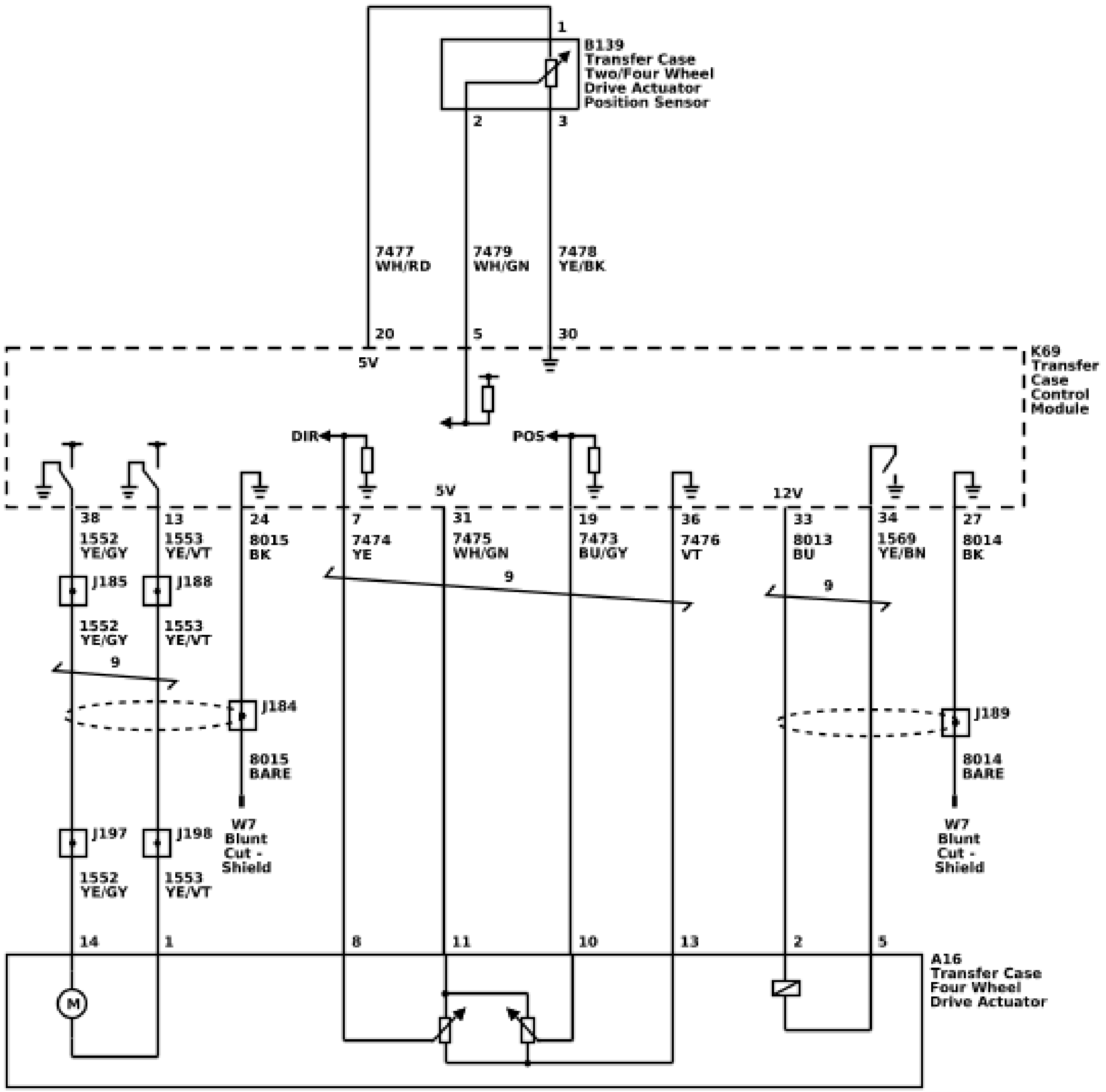
# Transfer Case - MP 3015

## Schematic and Routing Diagrams

## Transfer Case Control Schematics (Power, Ground, Serial Data, and Shift Controls)

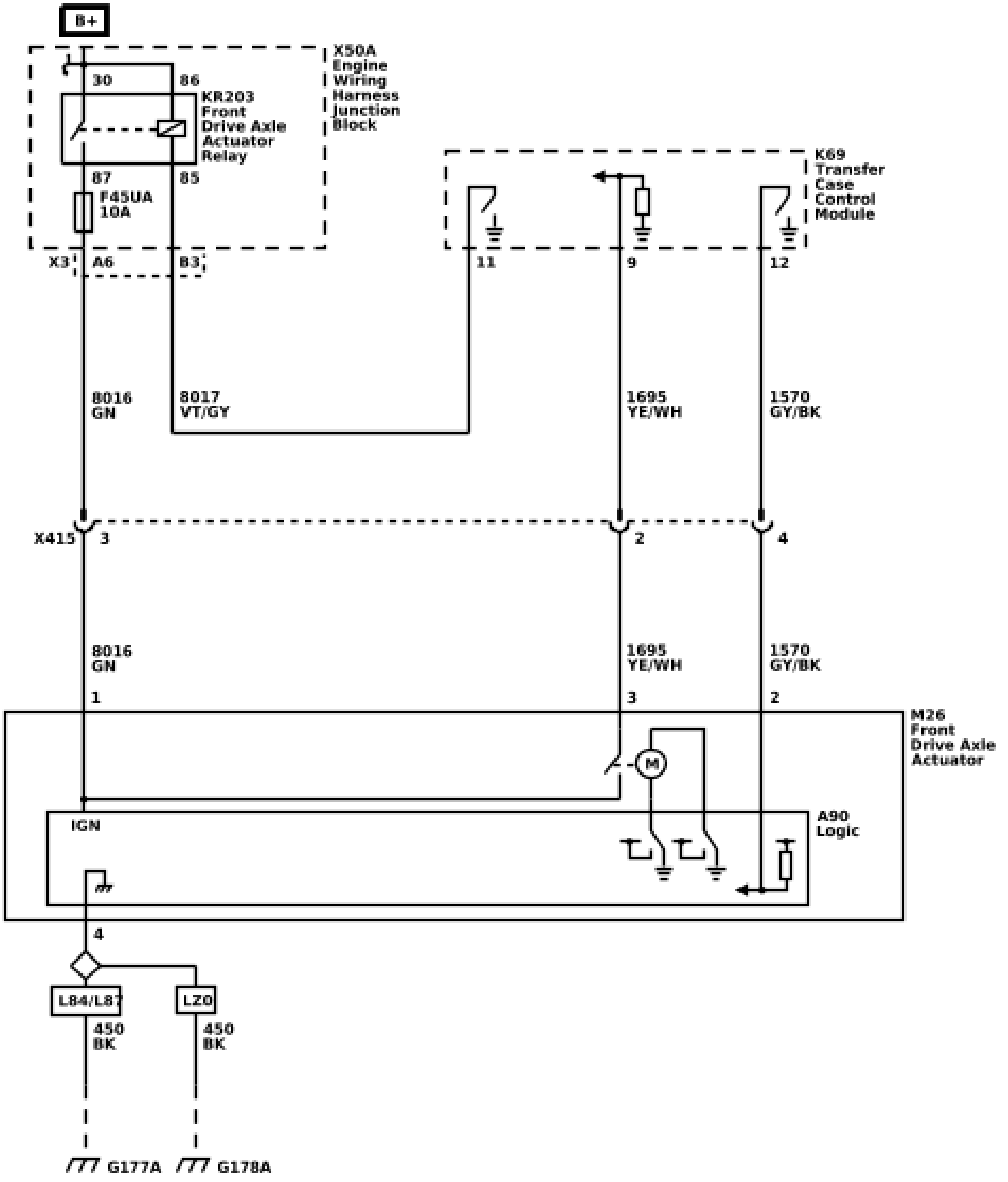

B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F51UA 30A
F47UA 15A
X3 B6
A2
1342 RD/GY
2139 VT/BK
LZ0
L84/L87
J159
2139 VT/BK
P7 Display
A90 Logic
P16 Instrument Panel Cluster Control Module
K71 Transmission Control Module
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
1
18
3
4
15
16
B+
IGN
K69 Transfer Case Control Module
25
L84/L87
LZ0
6550 BK
6550 BK
G177A
G178A
K9 Body Control Module
5V
X2 10
X4 3
2203 WH/BN
1449 BK/VT
J233
1449 BK/VT
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
1
3
S126 Ride Control Switch
365Ω
332Ω
453Ω
649Ω
AUTO
2⬆
4⬆
8.45kΩ
3.16kΩ
1.62kΩ
976Ω
6885761

## Transfer Case Control Schematics (Transfer Case Controls)


1
B139
Transfer Case
Two/Four Wheel
Drive Actuator
Position Sensor
2
3
7477
WH/RD
7479
WH/GN
7478
YE/BK
20
5
30
5V
K69
Transfer
Case
Control
Module
DIR
POS
5V
12V
38
1552
YE/GY
13
1553
YE/VT
24
8015
BK
7
7474
YE
31
7475
WH/GN
19
7473
BU/GY
36
7476
VT
33
8013
BU
34
1569
YE/BN
27
8014
BK
J185
J188
9
1552
YE/GY
1553
YE/VT
9
9
J184
8015
BARE
J189
8014
BARE
W7
Blunt
Cut -
Shield
W7
Blunt
Cut -
Shield
J197
J198
1552
YE/GY
1553
YE/VT
14
1
8
11
10
13
2
5
A16
Transfer Case
Four Wheel
Drive Actuator
M

6885762

## Transfer Case Control Schematics (Front Axle Controls)


B+
X50A Engine Wiring Harness Junction Block
30
86
KR203 Front Drive Axle Actuator Relay
87
85
F45UA 10A
X3
A6
B3
K69 Transfer Case Control Module
11
9
12
8016 GN
8017 VT/GY
1695 YE/WH
1570 GY/BK
X415
3
2
4
8016 GN
1695 YE/WH
1570 GY/BK
1
3
2
M26 Front Drive Axle Actuator
M
A90 Logic
IGN
4
L84/L87
LZ0
450 BK
450 BK
G177A
G178A

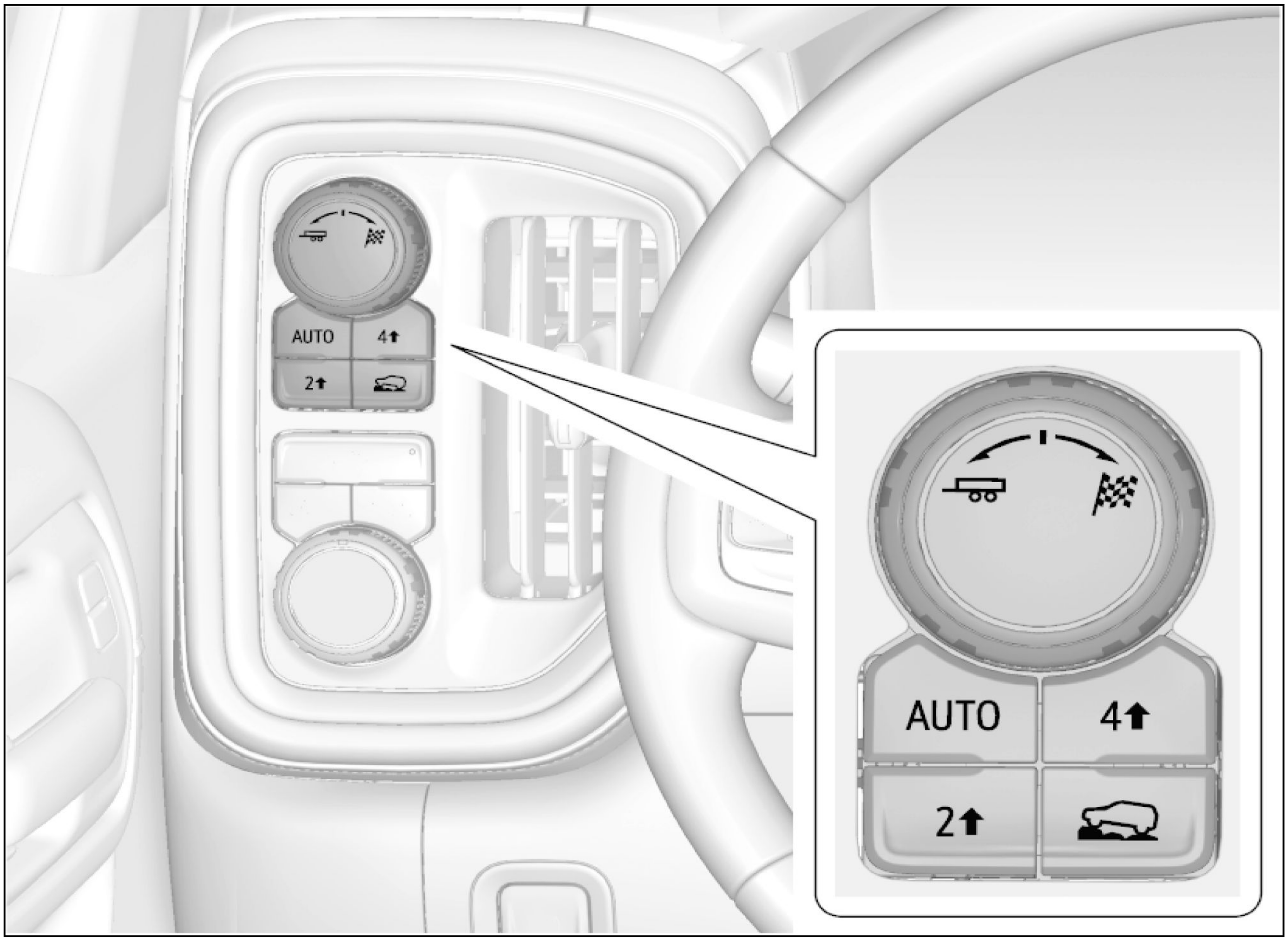
6885763

# Description and Operation

## Transfer Case Description and Operation

The Magna Powertrain (MP) model 3015 RPO NP0 transfer case is a 1 speed automatic, active transfer case (ATC). The MP 3015 ATC provides 3 modes, Auto 4WD, 4HI, and 2HI. The Auto 4WD position allows the capability of an active transfer case, which provides the benefits of on-demand torque biasing wet clutch and easy vehicle tuning through software calibrations. The software calibrations allow more features, such as flexible adapt ready position and clutch preload torque levels. The technology allows for vehicle speed dependent clutch toque levels to enhance the performance of the system. For example, the system is calibrated to provide 0–6.78 N•m (0–5 lb ft) of clutch torque during low speed, low engine torque operation, and predetermined higher torque for 40 km/h (25 mph) and greater. This prevents crow-hop and binding at low speeds and provides higher torque biases at higher vehicle speeds, in order to enhance stability.

## Transfer Case Shift Control Switch



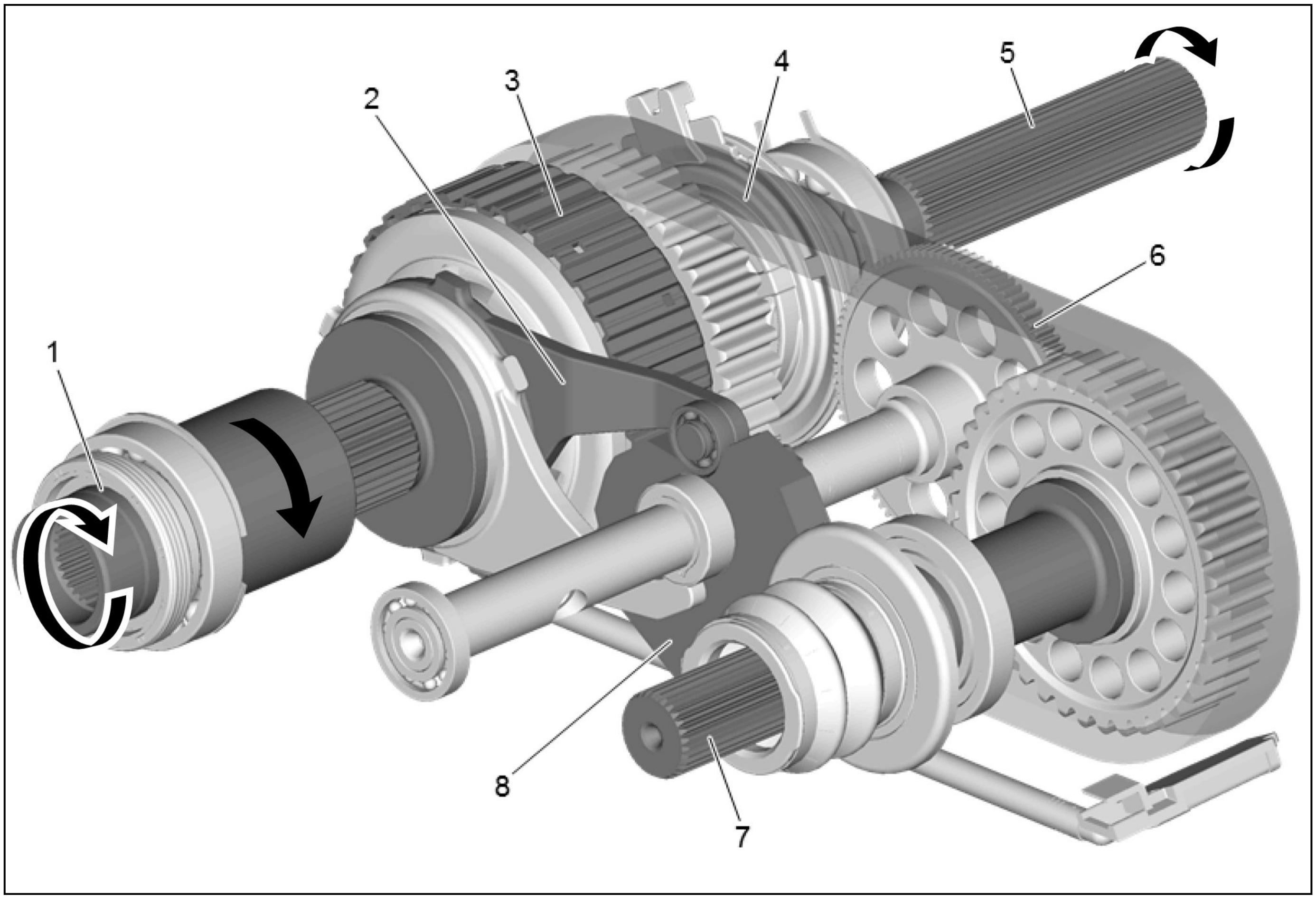
5123743

The MP 3015 ATC transfer case features a 3 mode shift control switch located on the instrument panel. When the ignition key is in the RUN position, the transfer case shift control module monitors the transfer case shift control switch to determine if the driver desires a new mode position. At a turn of the transfer case shift control switch, the lamp of the new desired position begins flashing to inform the driver that the transfer case shift control module has received the request for a new mode position. The lamp continues to flash until all shifting criteria has been met and the new mode position has been reached, or has been engaged. Once the mode position is fully active, the switch indicator lamp for the new position remains ON constantly. During normal driving situations, the transfer case can operate in the Auto 4WD mode. In the Auto 4WD mode, the transfer case shift control module monitors rear wheel slip speed, based on the inputs from the wheel speed sensors and/or vehicle speed sensor. When the vehicle experiences a rear wheel slip condition, the transfer case shift control module sends a pulse width modulated (PWM) signal to an electronic motor, which is the transfer case 2/4 wheel drive actuator assembly. This actuator rotates the transfer case control actuator shaft, applying a clutch. The clutch is designed to deliver a variable amount of torque, normally delivered to the rear wheels, and transfers it to the front wheels. Torque is ramped up to the front wheels until the front wheels speed sensor values equals that of the rear wheel speed sensors and/or vehicle speed sensor. Torque is ramped down to the front wheels. The process would repeat if rear wheel slip is detected again.

The MP 3015 TC transfer case has the added feature of also providing the driver with 2 manual mode positions:

- 4HI –4 Wheel Drive High Mode
- 2HI – 2 Wheel Drive High Mode

**2WD Mode Power Flow**



(1) Transfer Case Input Shaft

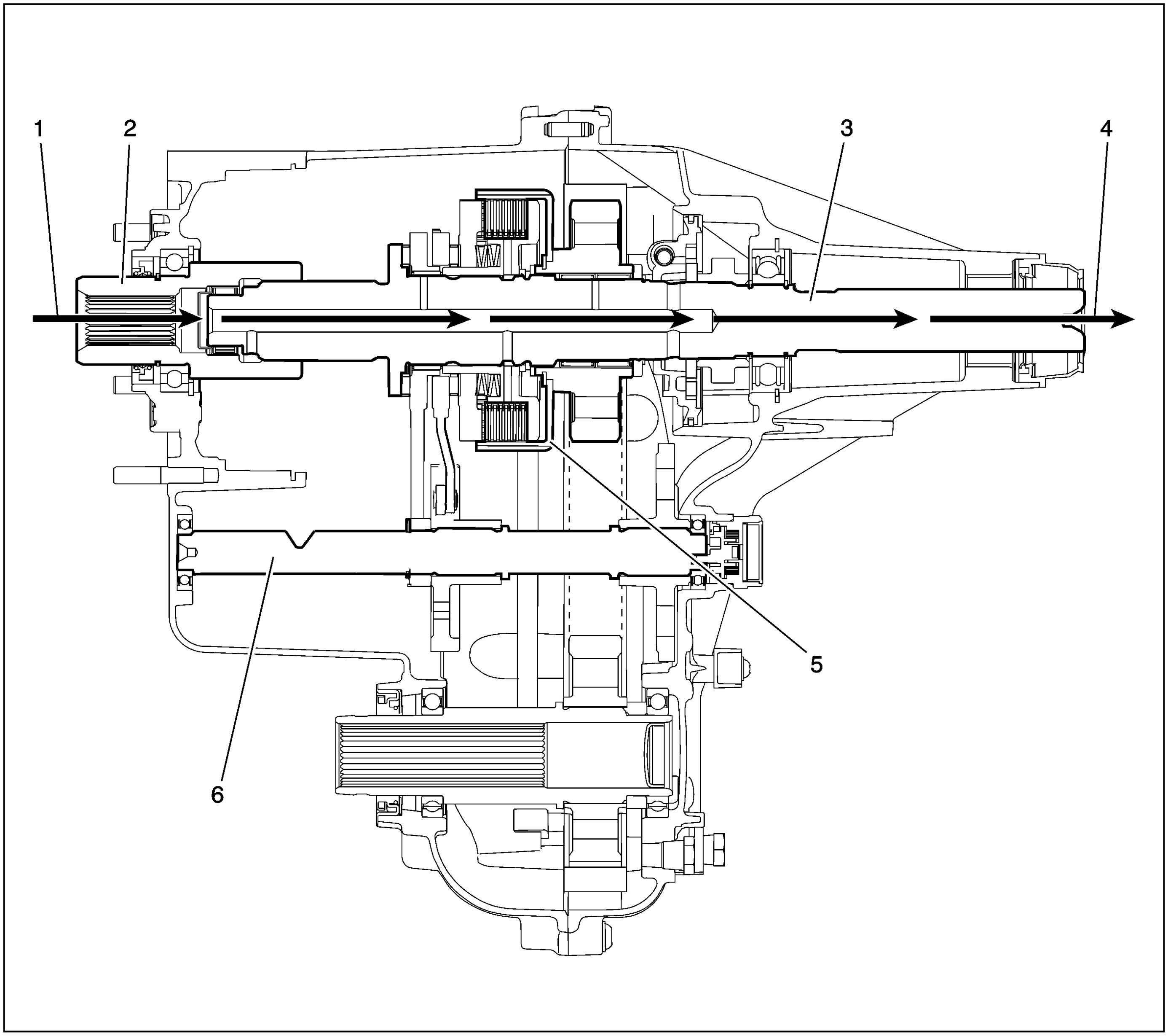
(2) Transfer Case Scissor Mechanism Lever

(3) Transfer Case Four Wheel Drive Clutch Pack

(4) Transfer Case Front Output Shaft Drive Chain Assembly

(5) Transfer Case Rear Output Shaft

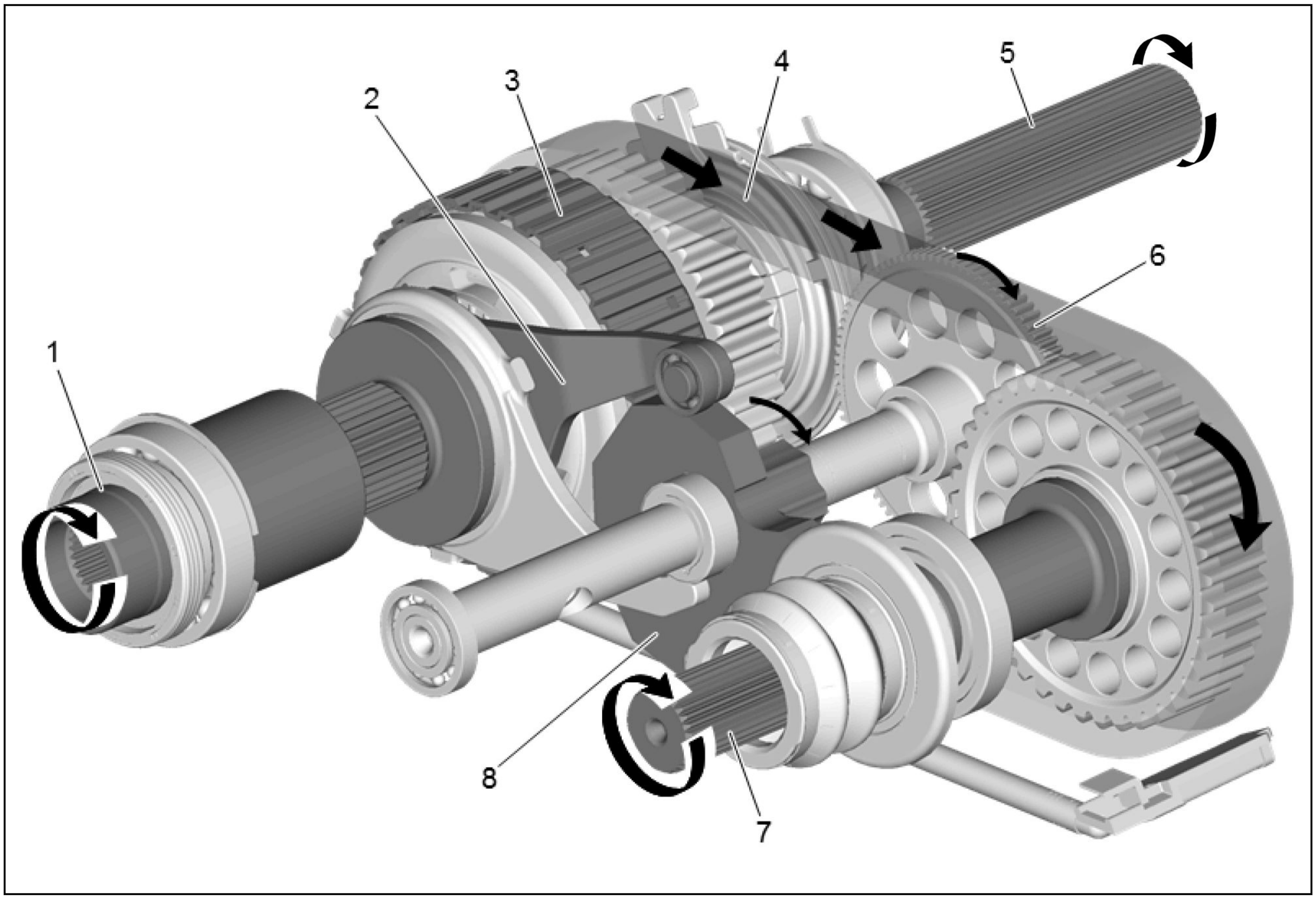
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam



2236742

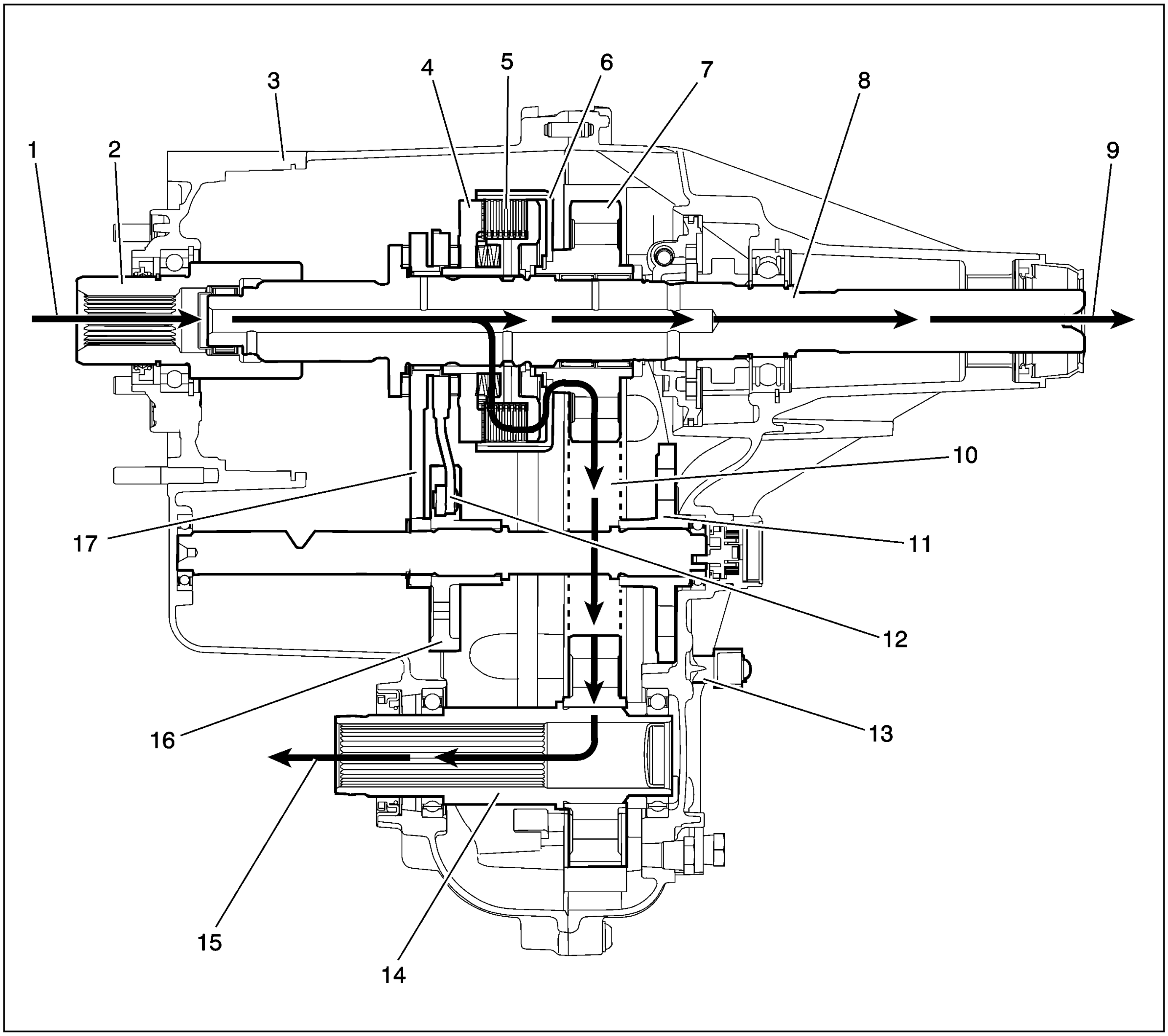
When the MP 3015 ATC is in the 2WD mode, the power flows from the transmission (1) to the input shaft (2). The input shaft (2) is splined to the rear output shaft (3). The rear output shaft (3) delivers the power flow to the rear propshaft (4). The position of the control actuator shaft (6) allows no clutch (5) engagement.

### 4HI Mode Power Flow



5071136

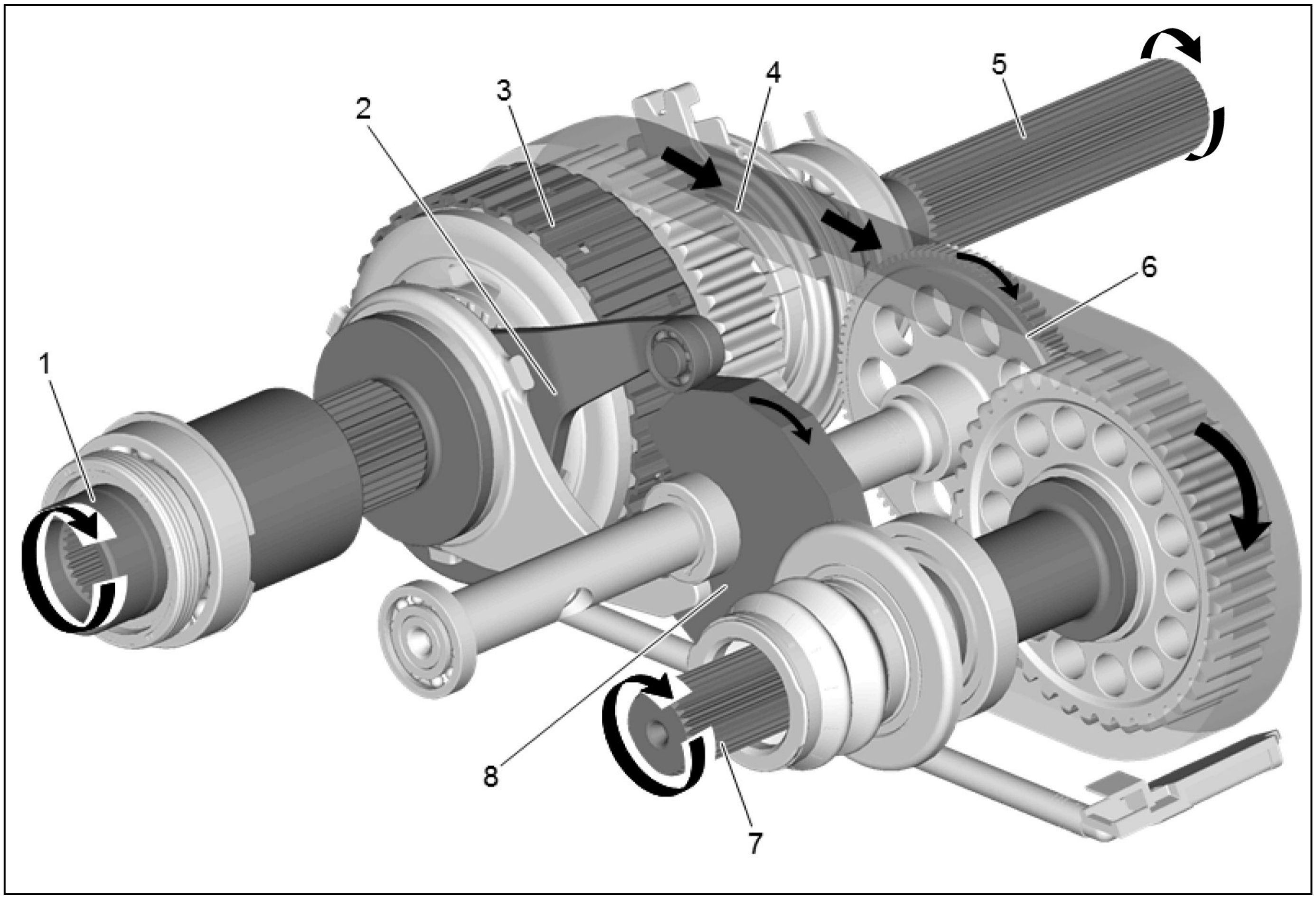
(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch Pack
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam



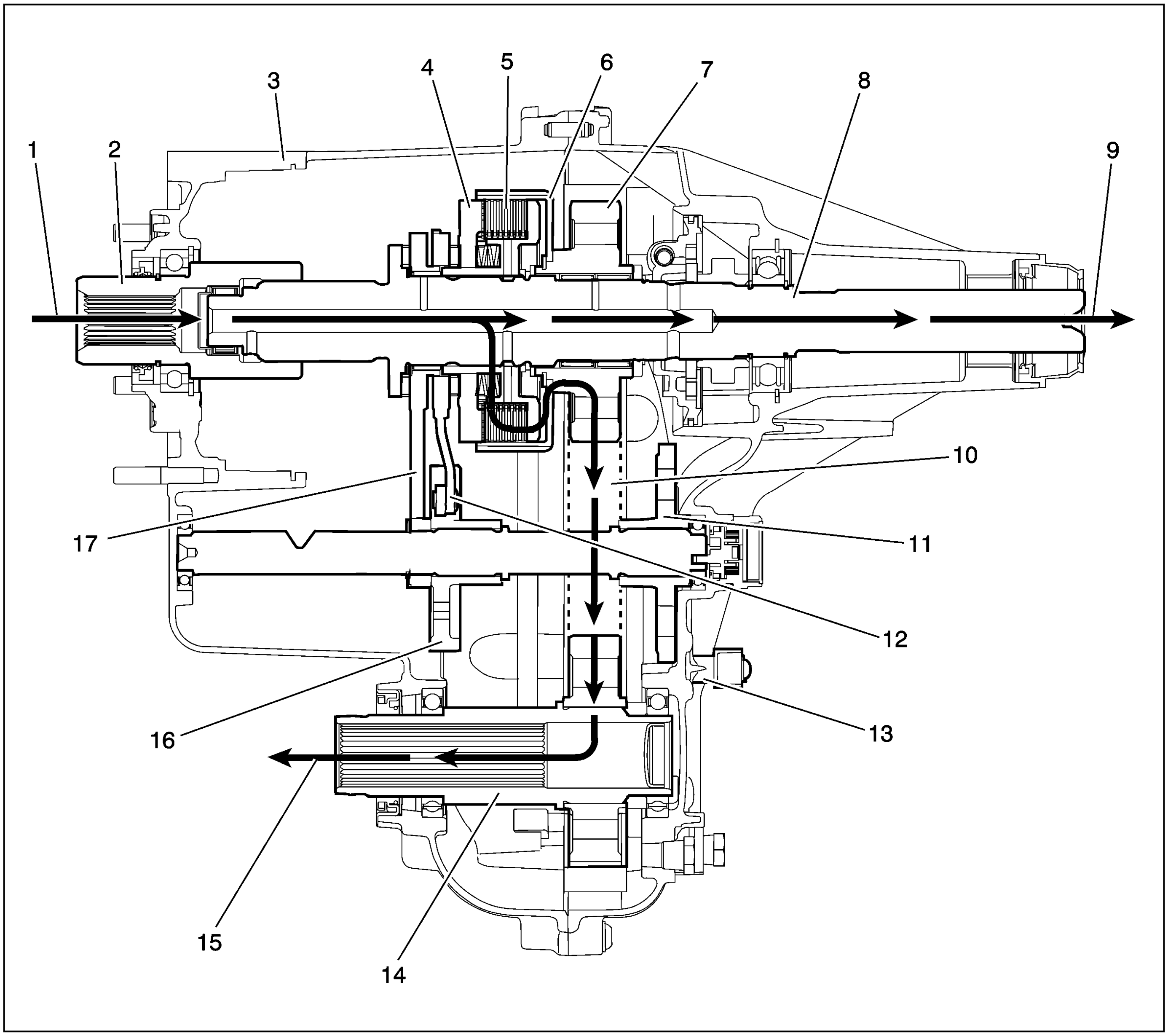
2236744

In the 4HI mode, the power flow to the rear propshaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propshaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) turns the control actuator shaft. A brake in the 2/4 wheel drive actuator assembly (13) holds the control actuator shaft in the full clutch position. The control actuator shaft is cam designed and the cam action moves the control actuator lever (12). The control actuator lever (12) pivots against the control lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and the clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the clutch housing (6). The power flows from the drive sprocket (7), through the chain (10), to the chain driven sprocket. The driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propshaft (15) through the front output shaft (14).

**4HI Auto Mode Power Flow**



(1) Transfer Case Input Shaft
(2) Transfer Case Scissor Mechanism Lever
(3) Transfer Case Four Wheel Drive Clutch Pack
(4) Transfer Case Front Output Shaft Drive Chain Assembly
(5) Transfer Case Rear Output Shaft
(6) Transfer Case Two/Four Wheel Drive Actuator Shaft Gear
(7) Transfer Case Front Output Shaft
(8) Transfer Case Two/Four Wheel Drive Actuator Cam


1
2
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17

2236744

In the 4HI Auto mode, the power flow to the rear propshaft (9) is the same as it is in the 2WD mode. To deliver power flow to the front propshaft (15) during the 4HI position, the transfer case control module commands the 2/4 wheel drive actuator assembly (13) to apply the clutch to a calibrated torque. The 2/4 wheel drive actuator assembly (13) rotates the control actuator shaft to the correct torque level positions. Rotating the control actuator shaft to the various positions changes the clutch torque level. The control actuator shaft is cam designed and the cam action moves the control actuator lever (12). The control actuator lever (12) pivots against the control lever (17) and moves toward the clutch pressure plate (4), to engage the clutch (5). As more pressure is applied to the clutch pressure plate (4), the clutch discs (5) are compressed. Using inner clutch discs, which are engaged with the clutch hub, and the outer clutch discs, which are engaged with the clutch housing (6), the power flow is delivered to the clutch housing (6). The clutch hub is splined to the rear output shaft (8), and clutch housing (6) rotates on a needle bearing on the rear output shaft (8). The chain drive sprocket (7) is splined to the clutch housing (6). The power flows from the drive sprocket (7), through the chain (10), to the chain driven sprocket. The driven sprocket is splined to the front output shaft (14). The power flow is delivered to the front propshaft (15) through the front output shaft (14). When a difference of front wheel speed to rear wheel speed is recognized, the transfer case control module commands for more or less clutch torque.

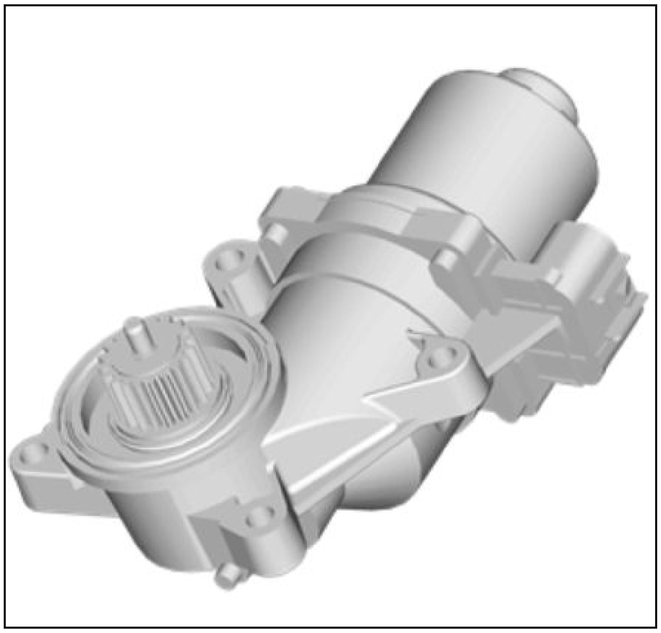
## Service 4 Wheel Drive Message

The Service 4 Wheel Drive Message is a display within the driver information center (DIC) and cannot be serviced separately. This message is used to inform the driver that a transfer case system condition has occurred. The Service 4 Wheel Drive Message is controlled by the transfer case shift control module via GMLAN.

## Transfer Case Two/Four Wheel Drive Incremental Sensor

The incremental sensor is mounted within the transfer case actuator and is replaced as an assembly. The incremental sensor converts the shift detent lever shaft position, representing a mode, into an electrical signal input to the transfer case shift control module. The module detects what position the transfer case is in by monitoring the voltage returned on the incremental encoder impulse signal circuit. This voltage translates into AUTO 4WD, 2HI, and 4HI or in transition between gears.

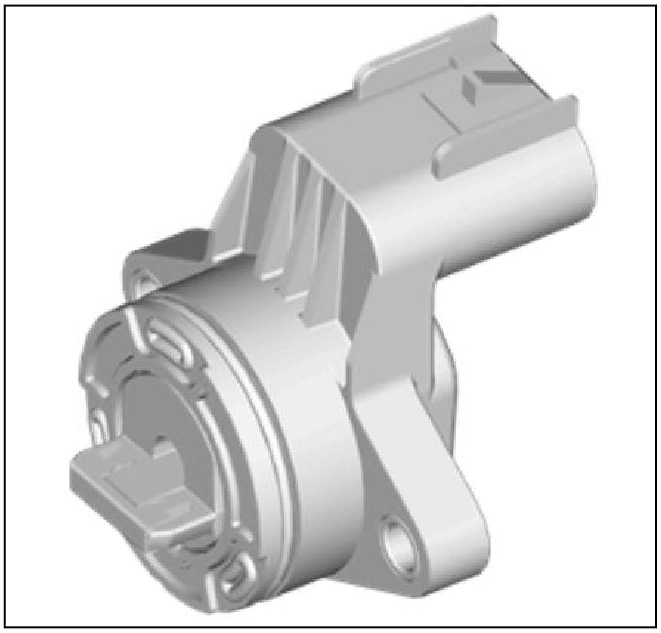
## Transfer Case Two/Four Wheel Drive Actuator Assembly



1986212

The transfer case two/four wheel drive actuator assembly consists of a permanent magnet DC motor and gear reduction assembly. It is located on the left hand side, driver's side, of the transfer case. When activated, it turns the shift detent lever shaft of the transfer case, clockwise or counterclockwise, to shift the transfer case. The motor/encoder is controlled with a PWM signal by the transfer case shift control module. This circuit consists of a driver on both the Motor A and Motor B circuits. The encoder motor is bi-directional in order to allow the motor to shift the transfer case from 2HI to 4HI positions.

## Transfer Case Actuator Shaft Position Sensor Assembly



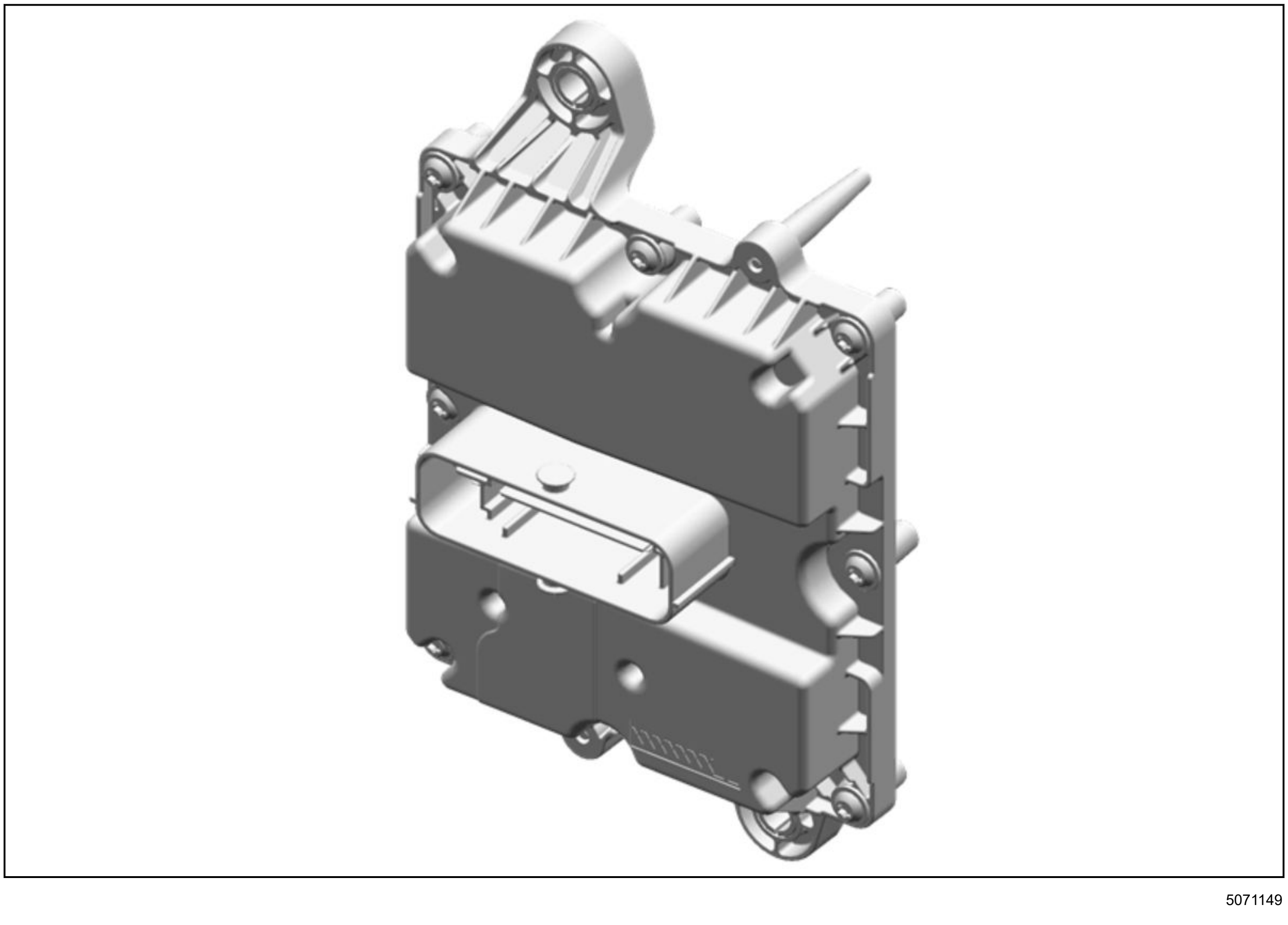
1986213

This sensor works in conjunction with the incremental sensor and shows transfer case position in degrees.

## Transfer Case Motor Lock

The transfer case motor lock is used to provide a 2HI and 4HI feature. When the lock circuit is energized, the transfer case encoder motor is allowed to turn. When the transfer case is placed 2HI or 4HI the motor lock circuit is de-energized and the lock is applied. This assures that the transfer case remains in the current gear position until a new gear position is requested. When AUTO 4WD is selected, the motor lock remains applied until an adaptive mode, torque being applied to the front propshaft, is required. During an adaptive mode the motor lock circuit is energized and the motor lock is released, enabling the encoder motor to turn and apply or release torque at the front propshaft.

## Transfer Case Shift Control Module



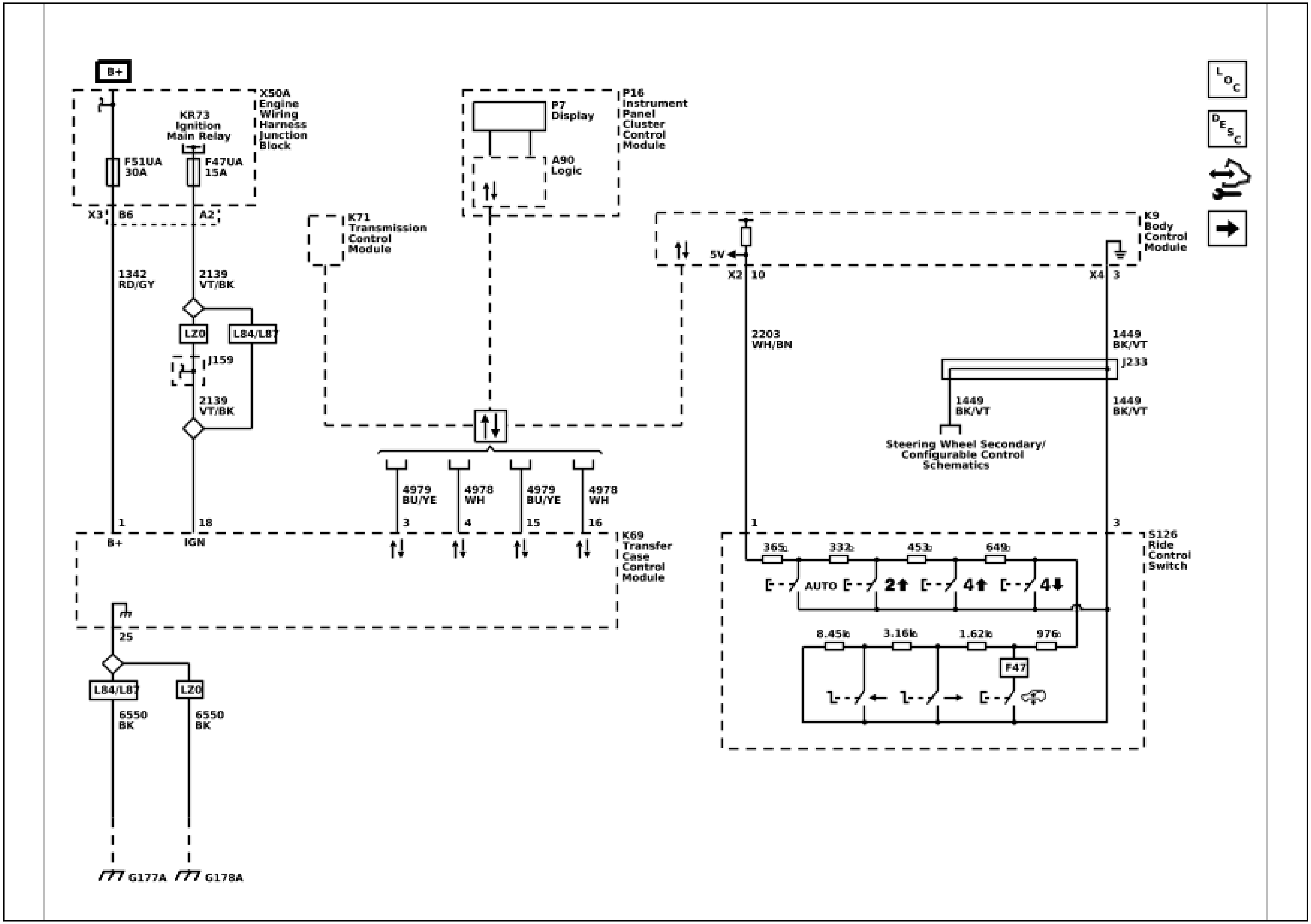
5071149

The transfer case shift control module uses the vehicle identification number (VIN) for calculations based on axle ratio, transmission, tire size, and engine size. For StabiliTrak applications, when the vehicle is in AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the four wheel speed sensors in order to detect wheel slippage. For non-StabiliTrak applications, when the vehicle is in AUTO 4WD mode, the transfer case shift control module monitors the wheel speed via the two front wheel speed sensors and the vehicle speed sensor in order to detect slippage. When wheel slippage is detected, the module applies a clutch pack contained inside the transfer case. This clutch pack is used to lock-in and apply the front propshaft, transferring torque to the front wheels. The clutch pack is applied by a motor/encoder assembly. When slip is no longer detected by the transfer case shift control module, the clutch is no longer applied.

# Transfer Case - MP 3025

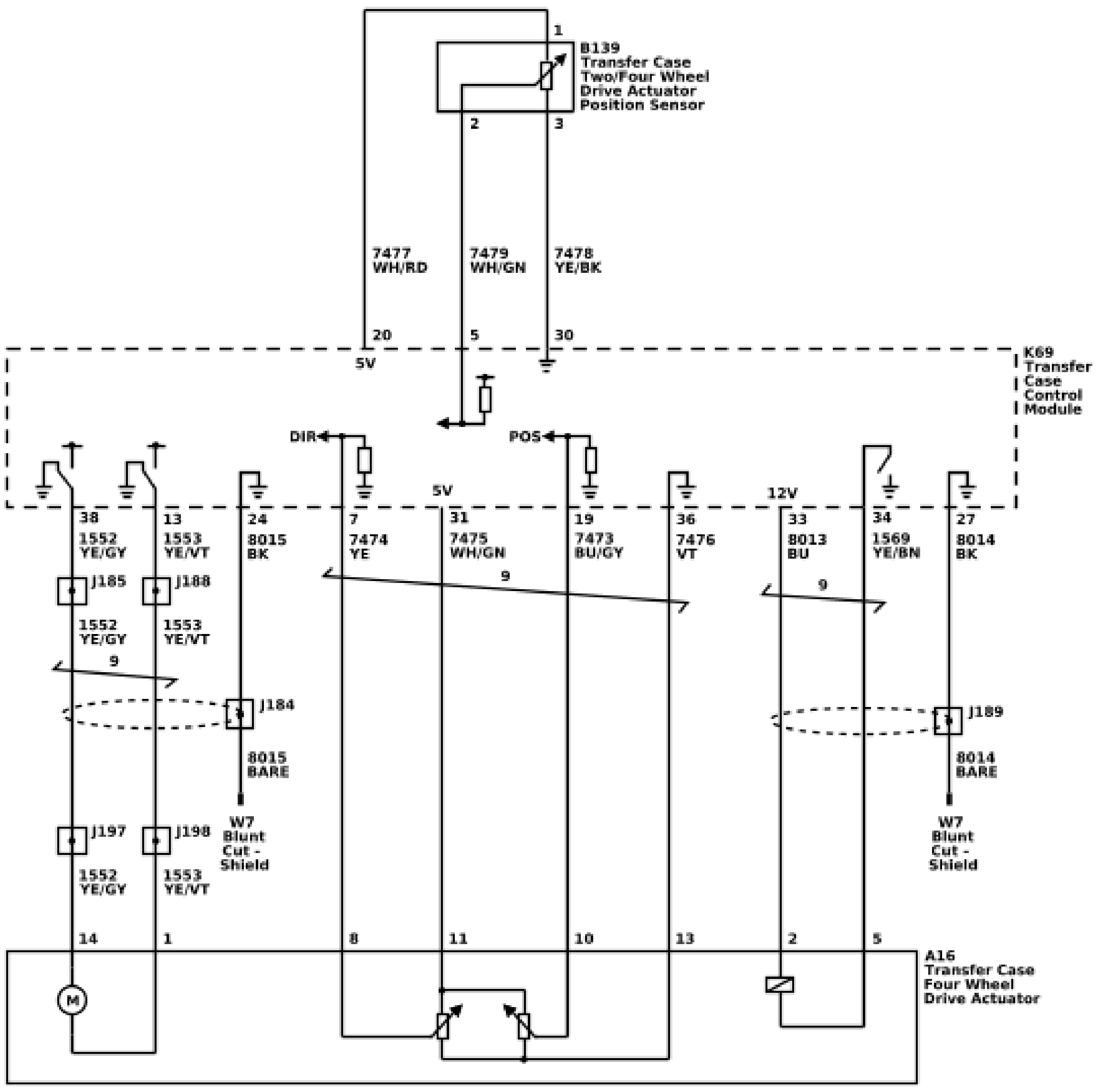
## Schematic and Routing Diagrams

## Transfer Case Control Schematics (Power, Ground, Serial Data, and Shift Controls)


B+
X50A Engine Wiring Harness Junction Block
KR73 Ignition Main Relay
F51UA 30A
F47UA 15A
X3 B6
A2
1342 RD/GY
2139 VT/BK
LZ0
L84/L87
J159
2139 VT/BK
K71 Transmission Control Module
P7 Display
P16 Instrument Panel Cluster Control Module
A90 Logic
4979 BU/YE
4978 WH
4979 BU/YE
4978 WH
1
18
3
4
15
16
B+
IGN
K69 Transfer Case Control Module
25
L84/L87
LZ0
6550 BK
6550 BK
G177A
G178A
K9 Body Control Module
5V
X2 10
X4 3
2203 WH/BN
1449 BK/VT
J233
1449 BK/VT
Steering Wheel Secondary/ Configurable Control Schematics
1449 BK/VT
1
3
S126 Ride Control Switch
365Ω
332Ω
453Ω
649Ω
AUTO
2
4
4
8.45kΩ
3.16kΩ
1.62kΩ
976Ω
F47

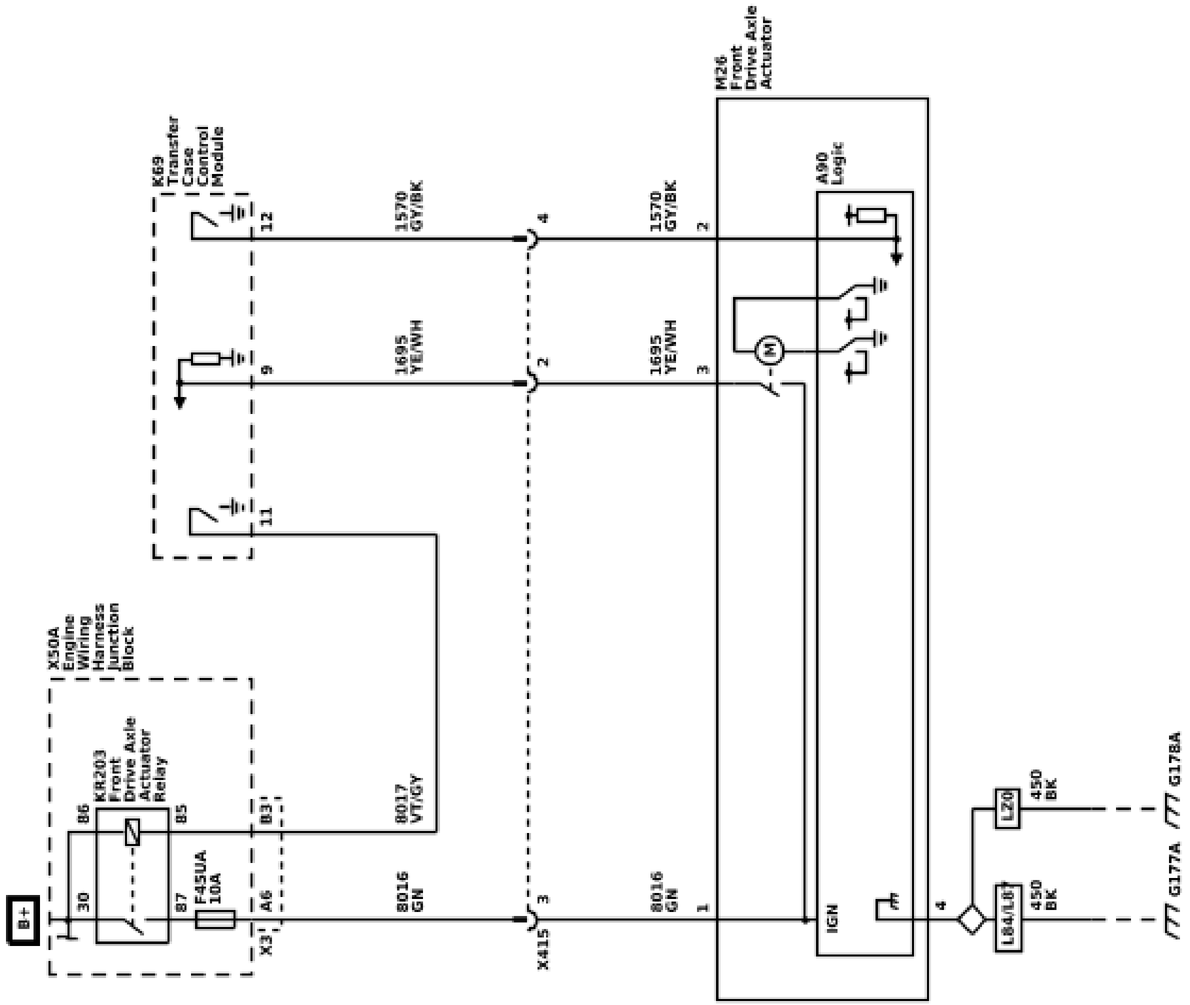
6885764

## Transfer Case Control Schematics (Transfer Case Controls)


B139 Transfer Case Two/Four Wheel Drive Actuator Position Sensor
1
2
3
7477 WH/RD
7479 WH/GN
7478 YE/BK
20
5
30
5V
K69 Transfer Case Control Module
DIR
POS
5V
12V
38
1552 YE/GY
13
1553 YE/VT
24
8015 BK
7
7474 YE
31
7475 WH/GN
19
7473 BU/GY
36
7476 VT
33
8013 BU
34
1569 YE/BN
27
8014 BK
J185
J188
1552 YE/GY
1553 YE/VT
9
9
9
J184
J189
8015 BARE
8014 BARE
W7 Blunt Cut - Shield
W7 Blunt Cut - Shield
J197
J198
1552 YE/GY
1553 YE/VT
14
1
8
11
10
13
2
5
M
A16 Transfer Case Four Wheel Drive Actuator
6885765

# Transfer Case Control Schematics (Front Axle Controls)

6885766


B+
X50A Engine Wiring Harness Junction Block
30
86
KR203 Front Drive Axle Actuator Relay
85
87
F45UA 10A
X3
A6
B3
8016 GN
8017 VT/GY
X415
3
K69 Transfer Case Control Module
11
9
12
1695 YE/WH
1570 GY/BK
2
4
M26 Front Drive Axle Actuator
1
3
2
M
A90 Logic
IGN
4
L84/L87
L20
450 BK
450 BK
G177A
G178A